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SOVIET NATIONAL INCOME AND PRODUCT IN 1965: THE GOALS OF THE SEVEN YEAR PLAN

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PREPARED FOR:
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SANTA MONICA • CALIFORNIA

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PREFACE

As part of The RAND Corporation's continuing study of the economic background of Soviet strategy, this Project RAND Memorandum presents a comprehensive calculation and analysis of the USSR's national income and product as planned by the Soviets for 1965. The goals of the Seven Year Plan are translated into a Soviet National Income and Product (SNIP) framework, basically that devised by RAND consultant Abram Bergson (Harvard University) and followed in an extensive series of RAND studies (listed in footnote 1 on page 1). Nancy Nimitz's estimates of Soviet national income in 1958 (the base year of the Plan), published in RAND RM-3112-PR, Soviet National Income and Product, 1956-1958 (June 1962), serve as the point of departure for the present study.

The major goal of this Memorandum (SNIP 1965) is the presentation of a systematic and integrated analysis of the growth and resource-allocation objectives of the Seven Year Plan. Use of the SNIP accounts as the medium through which the various goals of the Plan are viewed is designed to facilitate the development of such an analysis. Towards the same end, and in addition to the usual SNIP accounts, this study also presents detailed estimates of investment in the Seven Year Plan period.

The elaboration and systematization of Seven Year Plan goals should facilitate a critical evaluation of the realization of the Plan. For the moment, the absence of realized gross national product estimates for years later than 1958 rules out a detailed comparison between the Plan and its fulfillment. Such a task is, in any case, outside the scope of this study. However, because of its great topical interest, an interim appraisal of Plan fulfillment is attempted in the final chapter.

SNIP 1965 is the first estimate of planned national income, as compared with the after-the-fact calculations of all previous SNIP studies. As such, SNIP 1965 may be of interest for what information

it can provide on the interconnections of plan objectives, on the consistency of plan goals, and on the relation between categories of official Soviet national income accounting and those of the SNIP accounts. Information provided on the latter should also prove useful for future independent reconstructions of Soviet national income and their comparison with official data.

The author acknowledges with pleasure his indebtedness to RAND colleagues Richard H. Moorsteen and Nancy Nimitz for advice and comments on a number of problems encountered, and to Oleg Hoeffding and RAND consultant Raymond P. Powell (Yale University) for valuable critiques of earlier drafts of the study.

SUMMARY

The bulk of this study is devoted to the presentation and analysis of estimates of the national income and product of the USSR as planned for 1965. The estimates represent translations into a national income and product framework of the original goals of the Soviet Seven Year Plan, covering the period 1959-1965. A final chapter presents an interim appraisal of the fulfillment of the plan in relation to the estimates developed in the main sections of the work.

In the present study national income and product are valued at established prices; owing to insufficient information, no attempt is made to estimate adjusted factor cost counterparts. With the exception of prices in state retail trade, where a price decline of about 5 per cent was explicitly planned, the price level is assumed to have been planned to remain unchanged.

The planned growth of GNP in the seven years of the Plan period is estimated as 65 per cent, implying a compounded annual rate of increase of 7.4 per cent. Average annual rates of growth of end-use components of GNP vary widely about this average, ranging from 1 per cent for inventory investment to 14.4 per cent for a residual category embracing military outlays excluding pay and subsistence, current outlays on research and development, and a remainder including the statistical discrepancy and, possibly, a contingency reserve. The sharp planned increase of the residual category of final outlays is the most provocative finding of this study. In distinct contrast, total household outlays on consumption are planned to grow at 6.5 per cent per year. Adjusted for expected population change, the growth rate for per capita consumption is about 5 per cent, tangibly below the rates of increase attained in the 1950's.

However, the evidence does not seem to point to planned deceleration of the rates of growth of output as a whole. Unless the estimated rate of growth of GNP at established prices diverges

significantly from its factor cost counterpart (as yet unestimated), and this divergence appears unlikely, the growth rate planned for 1959-1965 is substantially the same as the rate achieved in the 1950's, as measured by Abram Bergson, Morris Bornstein, and Norman Kaplan.

In terms of resource use, the Plan provides for a decline in the share of GNP allocated to household consumption, even allowing for a substantial relative and absolute increase in the value of communal services; an increase in the share of gross investment, where the relative decline of inventory investment is more than made up by the growth of gross fixed capital investment; and a sharp increase in the share of a residual allocation, including military outlays, current expenditures on science, and a remainder which includes the statistical discrepancy.

For its intrinsic interest and for use in balancing the GNP accounts, this study also develops a set of investment estimates for 1958 (realized), 1959-1965 cumulated, and 1965. The planned pace of capital formation is found to be very rapid. The rate of growth of gross investment in 1959-1965 by all sectors of the economy in fixed capital other than livestock is 8.7 per cent per year including capital repairs and 9.0 per cent excluding capital repairs. Rates of increase are highest for collective farm investment and lowest for private housing construction. The planned or expected increase in total net investment in all capital, including livestock, is estimated as 93 per cent in seven years, or 9.8 per cent per year compounded.

Rates of increase of gross investment in the Seven Year Plan period fall below, possibly considerably below, the realized rates of the 1950's, according to official data. The official capital stock indexes imply a contrary finding: the compounded annual rate of growth of the capital stock in 1959-1965, estimated as 8.5 per cent, is at least as high as the average achieved in the 1950's.

The rate of investment (investment as a proportion of GNP) was growing in the 1950's, on the average, and the trend is to continue in the 1960's. The increasing relative drain on resources for investment is explained by the pressure of a high rate of growth of the capital stock and an increasing average capital-output ratio.

Chapter IV of this study is devoted to income and product measures of Soviet definition and to reconciliation of official national income data with the GNP estimates. There is controversy in the Soviet literature on the pattern of structural changes in total gross ("aggregate social product") and net ("national income") production, probably because of a dearth of statistics. An attempt to test the consistency of the Plan and the reliability of the GNP estimates by means of Soviet data on "money accumulation," or the primary incomes of the public sector, is also inconclusive because of doubts of the reliability of the data available. However, the attempt at reconciliation of GNP and Soviet definition national income is successful in the sense that (a) the discrepancy between the two totals, after suitable adjustment for difference in coverage, is absolutely and relatively small and (b) the GNP accounts provide the elements for a consistent reconstruction of the end-use breakdown of national income as defined by the Soviets.

The latter reconstruction shows that the surprisingly large increase planned for the residual category of GNP (military outlays, research and development expenditures, and the like) has a counterpart in national income (Soviet definition) in the shape of an approximate doubling of additions to state reserves. In addition to current material operating reserves, state reserves include material stockpiles of a long-term character and also military hardware of unspecified varieties.

The Seven Year Plan documents call for a rate of growth of national income (Soviet definition) of 7.4 per cent per year. This is identical to the estimated rate of growth of GNP over the same period. In the past, official Soviet indexes of national income

have implied rates of growth consistently higher than those of independent Western estimates of Soviet output. However, there may be reasons, particularly connected with price weights, why biases present in indexes of realized income need not be reproduced in calculations of planned income.

The absence of realized GNP estimates for years subsequent to 1958 makes it impossible to inspect in detail the progress of the Seven Year Plan to date. However, on the basis of the incomplete Soviet data now available, it seems highly unlikely that the Plan will be fulfilled as a whole. In the official claims, the goals for gross industrial production and freight transport turnover are being overfulfilled. As is well known, however, the agricultural output goal is far out of reach, as are also the agricultural productivity targets. In the light of the estimates presented here, it appears that state budget revenues, the major source of finance, are growing at a rate below that planned and are inadequate to meet the rapidly rising requirements for outlays on research and development, on the military, and for investment expenditures. Indeed, the pace of increase of net fixed capital investment may well be behind schedule. However, inventory investment has already increased far more rapidly than planned. Government stockpiling, military and otherwise, increased more than two and a half times in 1960 and by a further one-sixth to one-quarter in 1961. A continuation of these trends will undoubtedly mean a 1965 pattern of resource use and activity levels substantially different from those originally planned or expected.

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I. INTRODUCTION

PURPOSE OF THE STUDY

This paper presents the results of an attempt to estimate Soviet national income and product in 1965 plan. It is important to make clear what this study is not as well as, hopefully, what it is. The estimates described herein are in no sense the author's forecast of Soviet product in 1965. Rather, an attempt has been made to translate the targets of the Seven Year Plan formulated in 1958-1959 into a set of national income and product accounts for the year 1965. The Soviet National Income and Product (SNIP) framework employed for that purpose is, with minor changes, that devised by Professor Abram Bergson and used in published calculations, covering 1928, 1937, 1940, 1948, 1949-1955, by Oleg Hoeffding, Abram Bergson, Hans Heymann, Jr., and Nancy Nimitz.[1] The calculations of this paper are based on SNIP estimates compiled by Nancy Nimitz for 1958,[2] the base year of the Seven Year Plan targets.

It is not necessary here to elaborate on the significance of national income calculations for the study of the economic growth of the Soviet Union.[3] However, the estimates of this paper may have some special interest. Previous SNIP calculations have been estimates of realized income and product flows; SNIP 1965 represents the first calculation of planned flows of a future time period. In addition to

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[1] Abram Bergson, Soviet National Income and Product in 1937, New York: Columbia University Press, 1953; Abram Bergson and Hans Heymann, Jr., Soviet National Income and Product, 1940-1948, New York: Columbia University Press, 1954 (hereafter abbreviated to SNIP 1940-1948); Oleg Hoeffding, Soviet National Income and Product in 1928, New York: Columbia University Press, 1954; Oleg Hoeffding and Nancy Nimitz, Soviet National Income and Product 1949-1955, The RAND Corporation, RM-2101, April 6, 1959 (hereafter, SNIP 1949-1955); Abram Bergson, The Real National Income of Soviet Russia Since 1928, Cambridge: Harvard University Press, 1961 (hereafter, Real SNIP).

[2] Nancy Nimitz, Soviet National Income and Product 1956-1958, The RAND Corporation, RM-3112-PR, June 1962 (hereafter, SNIP 1956-1958).

[3] See Real SNIP, pp. 1-4.

providing an ordered view of Soviet economic policy, the translation of plan goals into a SNIP framework may be of value for its evidence on the plan as plan -- for example, consistency of components, the relation between the SNIP accounts and the national product measures of the plan. Evidence of this kind is the focus of discussion in Chapter IV; Chapters II and III concentrate on the summary and analysis of the indicators of Soviet intentions and expectations.

As already indicated, no attempt is made in this paper to forecast actual 1965 values. Nevertheless, the obvious question arises, to what extent may the estimates developed be used as a 1965 forecast?

Even the most casual acquaintance with Soviet economic developments since 1958-1959 impels the conclusion that Soviet expectations today with respect to 1965 must be different in important respects from those held in 1958-1959. Soviet agriculture has performed poorly after the bumper harvest year of 1958, to the unconcealed disappointment of the Soviet government. Changes have been made in investment allocations for particular branches and sectors of the economy. A projected military demobilization has been halted in midcourse; the identified military budget in 1961 was increased sharply in midyear, and a further increase was planned for the following year. Where the private sector was originally expected to contribute significantly to the fulfillment of the housing space target, a recent decree has sharply curtailed individual housing construction and ownership.[1] Prices of meat and butter have been raised and the gradual abrogation of direct income taxes has been halted in midcourse.

Judged by the degree to which terminal year realized magnitudes coincide with original plan targets for that year, no Soviet long-run plan of the past has achieved more than indifferent success. The last five-year plan, the Sixth, was abandoned after two years and the Seven Year Plan substituted when it became apparent that the

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[1] "Ob individual'nom i kooperativnom zhilishchnom stroitel'stve," reporting a decree of the Party Central Committee and the USSR Council of Ministers, Pravda, August 7, 1962, p. 1.

targets of the Sixth Plan were hopelessly out of reach. It is probably true of most of the Soviet five-year plans that the framers themselves expected actual results to differ substantially from the stated goals. Partly for this reason, "the operational plan in the Soviet Union is not the long-term plan, but the short-term plan, the annual plan."[1]

It does not follow however, that a study based on the original Seven Year Plan goals has little or no value other than as a contribution to the understanding of plan morphology. To begin with, it is a mistake to judge either the realism or success of a Soviet long-range plan just by the gap between goal and realization. Over a long period of time, even in a planned and regimented economy, events have a way of unsettling the best laid plans in a manner unpredictable by the most far-sighted and realistic of prophets. To the extent that it is seriously intended, the Soviet long-range plan may be viewed as a guide to the paths in which planners hope to lead the economy, knowing and expecting that there will be twists and turns along the way.

The special circumstances surrounding the genesis of the Seven Year Plan lend additional interest to its particulars. The very fact that its raison d'etre was as replacement for the abortive Sixth Five Year Plan suggests that realism and relevance were points of emphasis in the formulation of the Seven Year Plan directives. In addition, in 1958-1959, radical changes in industrial and agricultural organization, revisions in the mechanism of central planning, and changes in planning methods took place.[2] In 1957, most of the central industrial ministries were abolished and control was transferred to regional councils of national economy in the first instance. The State

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[1] Herbert S. Levine, "The Centralized Planning of Supply in Soviet Industry," Joint Economic Committee, Congress of the United States, Comparisons of the United States and Soviet Economies, Part I, Washington D. C., U. S. Government Printing Office, 1959, p. 152.

[2] For a survey, see M. C. Kaser, "Changes in Planning Methods During the Preparation of the Soviet Seven-Year Plan," Soviet Studies, X:4 (April 1959), pp. 321-338.

Planning Commission received many of the executive powers formerly vested in the central ministries.[1] In 1958 the MTS (machine-tractor stations) were abolished and their machinery sold to the collective farms. The system of multiple prices of agricultural products was abolished,[2] thereby immensely simplifying the task of economic calculation. Of particular interest here are the attempts to improve the methodology of planning: the adoption of an improved and elaborated set of national economic balances recommended by a conference of statisticians in 1957;[3] the institution of annual directives within the over-all guidelines of the Seven Year Plan to insure continuity in planning, and the overhauling of the instructions on the formulation of annual plans;[4] the increased use of the "synthetic," nonmaterial balances for greater integration and consistency of parts of the plan.[5]

All this suggests that a particular effort was made to turn out a consistent and meaningful set of directives for the Seven Year Plan period. This is not to say that realism is the hallmark of all parts of the plan. The agricultural targets were regarded in the West with

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[1] On the 1957 industrial reorganization see Oleg Hoeffding, "The Soviet Industrial Reorganization of 1957," American Economic Review, Papers and Proceedings, XLIX:2 (May 1959), pp. 65-77; and Michael Kaser, "The Reorganization of Soviet Industry and its Effects on Decision Making," in G. Grossman (ed.), Value and Plan, Berkeley and Los Angeles: University of California Press, 1960, pp. 213-234.

[2] Nancy Nimitz, "Soviet Prices and Costs," Comparison of the United States and Soviet Economies, Part I, pp. 267-268; Lazar Volin, "Reforms in Agriculture," Problems of Communism, VIII:1 (January-February 1959), pp. 35-43.

[3] Vsesoiuznoe soveshchanie statistikov, 4-8 iunia 1957g., Moscow: Gosstatizdat, 1958, pp. 177-261.

[4] F. Kotov, P. Krylov, "Ob osnovnykh metodicheskikh polozheniiakh k sostavleniiu narodnokhoziaistvennykh planov," Planovoe khoziaistvo, 1958, No. 9, pp. 11-24.

[5] V. Kats, "O planovom balanse narodnogo khoziaistva," Promyshlenno-ekonomicheskaia gazeta, August 3, 1958, p. 2.

considerable skepticism almost from the time of the publication of the draft in the fall of 1958, but these targets are more likely an indication of overoptimism than of arbitrariness. The goals of the Seven Year Plan are, therefore, taken to provide a guide to Soviet planners' intentions and expectations, at least to their view of the desirable directions of growth. Whatever the ultimate conclusion concerning the relation of the Seven Year Plan to real prospects for 1965 as currently foreseen, analysis of the Seven Year Plan targets is a useful first step. Although a detailed analysis of the progress of the Plan is beyond the scope of this paper, a summary evaluation will be attempted in the concluding chapter.

THE SNIP ACCOUNTS

The basic national income and product accounts for 1965 are set out in Tables A through F at the end of this chapter. The economy is divided into two sectors, households and the public sector,[1] for each of which an income and outlay account are calculated. For every entry on the income side there is a corresponding entry on the outlay side for each sector. Table A shows the incomes of households as the sum of income from agriculture, wages and salaries, earnings of artisans, incomes of the armed forces, other incomes currently earned, and the imputed rent of owner-occupied dwellings. The addition of transfer receipts yields total incomes of households. The incomes of households are identically equal to their outlays, shown in Table B, distributed between outlays for consumption (purchases of goods and services and consumption of income in kind), investment (outlays on building materials and services and farm investment in kind), and transfer payments in the form of savings and direct taxes. Incomes of the public sector shown in Table C are the sum of incomes

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[1] The term "sector" will also be used in this paper to designate each of the two major property groupings within the public sector -- the state-cooperative group, embracing state-owned and nonfarm cooperative organizations, and the collective farm group. The term "branch" will be used to designate production divisions of the economy -- industry, agriculture, and so forth.

retained by economic organizations, charges for special funds, and payments out of incomes by enterprises and organizations to the budget, less allowance for subsidies, plus depreciation and transfer receipts from households. Total outlays of the public sector shown in Table D are identically equal to total incomes of the public sector and consist of outlays on communal services (health care, education, and so forth), government administration, investment, outlays on internal security and defense, and transfer outlays to households. Table E shows the derivation of net and gross national product as the sum of all incomes and outlays less transfer incomes and outlays. Table F shows the distribution of gross national product by final use categories--household consumption, public sector outlays on communal services, investment, administration, internal security, defense and other outlays.

While the 1965 accounts follow closely the model set out in other SNIP studies, a few changes have been introduced, and the nature of one needs to be defined here. In the previous SNIP accounts, the balance of incomes and outlays of households was struck on the income side -- that is, total outlays were independently determined and total incomes were fitted to total outlays by means of a statistical discrepancy entry on the income side. Similarly, the balance between incomes and outlays of the public sector was struck on the outlay side by fitting the outlays to the independently estimated incomes of the public sector, considering the gross investment residual as accounting for all other outlays besides those enumerated. The absence of any information in Soviet sources on 1965 expected household outlays on services (other than housing) and planned military expenditures necessitated a different approach in this study. The balance between incomes and outlays of households is struck on the outlay side, rather than the income side, by allowing "other services" to take up the residual of household outlays. For the public sector, the lack of a 1965 military outlay datum made it necessary to estimate gross investment independently. The residual in 1965 public sector outlays is composed of military outlays, excluding military pay and subsistence which are estimated

independently, current outlays on "science," and any statistical discrepancy.

A special feature of the SNIP 1965 accounts is a calculation of gross and net investment in the whole economy, Table G, made necessary at least in part by the requirement for an independent calculation of gross investment by the public sector.

RELIABILITY OF THE ESTIMATES

As already stated, the SNIP 1965 estimates are intended as translations into GNP terms of the original goals embodied in the Seven Year Plan. The implications of this statement are explored below.

Scope of the "Seven Year Plan"

As a public document, the Seven Year Plan is available only in the form of the so-called Control Figures, proposed by Khrushchev in a speech to the 21st Party Congress on January 27, 1959[1] and adopted by the Congress on February 5, 1959.[2] Theoretically the set of control figures represents only a stage in the development of a Soviet plan, which is followed by the elaboration and articulation of the control figures into a final plan.[3]

Unfortunately, no final Seven Year Plan document has been published. The nonavailability of a final plan has, of course, complicated greatly the task of this study and added to its bulk.

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[1] "O kontrol'nykh tsifrakh razvitiia narodnogo khoziaistva SSSR na 1959-1965 gody," Pravda and Izvestiia, January 28, 1959. Khrushchev's report presented a revised version of the theses adopted by the November 1958 Plenum of the Party Central Committee and published in the central press on November 14, 1958.

[2] "Kontrol'nye tsifry razvitiia narodnogo khoziaistva SSSR na 1959-1965 gody," Pravda and Izvestiia, February 8, 1959.

[3] For a description of the process see Basile Kerblay, "Entretiens sur la planification avec des économistes soviétiques," Cahiers du Monde Russe et Soviétique, I:1 (May, 1959). p. 175.

It has been necessary to sift the literature in that patient search for minutiae so familiar to students of Soviet affairs. A potentially more serious difficulty is that no reference to a final plan document has been encountered in Soviet sources, suggesting, as Naum Jasny concludes, that "the Control Figures for 1959-1965 seems to be the final product."[1]

It is unlikely that this constitutes a serious limitation on the reconstruction of the plan in SNIP 1965. A considerable amount of supporting data, for example, is necessary to the formulation of even the major goals appearing in the Control Figures and such information was submitted by lower order enterprises and organizations to the planners.[2] The construction of planned "synthetic" balances of the economy was apparently an important part of the preparation of the Seven Year Plan,[3] a process which by its nature is calculated to provide the integration of the plan targets set out in control figures.

For the purposes of this study, the Seven Year Plan is considered to encompass not only the Control Figures but also the supplementary detail that underlies the Control Figures. The first criterion of reliability is, then, that the particular datum represent an element of the complete Seven Year Plan, as defined.

While the criterion seems clear in principle, its application encounters difficulties. The first and less significant problem is that of discriminating between genuine elements of the Seven Year

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[1] Naum Jasny, Essays on the Soviet Economy, New York: Frederick A. Praeger, 1962, p. 177.

[2] An impression of the kind of detail accumulated in the preliminary stages of plan formulation may be derived from the scope and categories of Raschetnye i spravochnye materialy k obosnovaniiu proekta perspektivnogo plana razvitiia narodnogo khoziaistva SSSR na 1959-1965 gody and Formy i pokazateli k sostaveniiu proekta perspektivnogo plana razvitiia narodnogo khoziaistva SSSR na 1959-1965 gody which appear in French translation in Cahiers de l'Institut de Science Économique Appliquée, Le Plan Septennal Soviétique, No. 107 Series G, number 10, November 1960.

[3] M. Bor, A. Notkin, "Metodologicheskie problemy balansa narodnogo khoziaistvo," Voprosy ekonomiki, 1961, No. 5, p. 39.

Plan, as defined, and estimates generated outside the system of the Plan. A case in point is the discussion of national income by origin in Chapter IV. However, the issues involved are not of central importance.

The more bothersome problem is the reliability of estimates made in the absence of explicit indications in Soviet sources of the required numbers.[1] To what extent are the estimates dependent on roundabout estimation, on projections of past trends, or even on educated guesses, rather than on data specifically and positively identified in Soviet sources as components of the Seven Year Plan? As in all previous independent reconstructions of Soviet national income, there is no sharp line of demarcation nor any clear order of acceptability of these estimating procedures. Soviet sources are frequently deficient in explanation of the quantitative information they provide. The confidence that can be placed in roundabout estimates depends on the confidence to be attached to the links in the chain of reasoning. Whether projections or educated guesses may be used depends on the nature and importance of the particular block in the over-all structure. Nevertheless, since we have usually had less direct information from Soviet sources on planned than on realized magnitudes, and since this study is concerned with planned values, it is necessary to appraise the results from this point of view.

The fact that we are concerned with reflecting a particular set of planned values suggests a constraint on the order of acceptability of estimating procedures, requiring preference for values thought more likely to be elements of the Plan over values considered to be more consistent with related data, whether or not identified as elements of the Plan. While such a dilemma is conceptually possible, it was not encountered in the calculation of the accounts.

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[1] There is one item in the SNIP accounts that has no counterpart in the Seven Year Plan because of differences in coverage between the Soviet and SNIP accounting systems. This is the imputed rentals on owner-occupied housing. The basis for the SNIP valuation of this item is the average rent multiplied by the housing stock, which are components of the hypothesized Plan.

The possibility of error in situations where the choice is not clear cannot be ruled out, but the significance of this is likely to be swamped by considerations of a more conventional sort.

Only a few income and outlay components could be directly estimated from reliable, authoritative Soviet sources. Fortunately, however, the relative weight of these estimates in the balance is great. The value of the worker and employee wage bill, of retail trade turnover, and of total state budget incomes have been published in Soviet sources. The announced cumulated seven-year investment targets together with published 1958 investment data required only the apparently reasonable assumption of a constant annual rate of growth to be translated into 1965 goals. The estimates of public sector expenditures on health care and education (excluding outlays on "science") are examples of categories where in the absence of direct information on 1965 planned values, other Seven Year Plan targets, such as school enrollment or hospital beds, have served as multipliers to convert realized 1958 to planned 1965 estimates. This method also characterizes the estimates of, for example, transfer receipts of households, outlays on housing (including imputed rent), on building materials and building services. The use of related Seven Year Plan targets along with other information in a roundabout process of estimation of 1965 income and product flows is most laboriously illustrated in the calculation of net income of households from agriculture, which takes up some 20 pages in Appendix A, and the estimation of retained income of collective farms in Appendix C. On the other hand, the estimates of military manpower which underlie estimates of incomes of the armed forces, estimates of other money incomes currently earned," of subsidies in the public sector, and of outlays on internal security, cannot be characterized as other than (hopefully) educated guesses.

In short, I am painfully aware of a number of places in which the estimates of particular components depend heavily on projections, heroic assumptions, and the liberal use of unvarnished intuition. Where such recourse was required, it is made explicit in Appendixes A through E, which provide detailed notes to the basic tables, and

the interested reader is urged to explore them. It is to be hoped, nevertheless, that the reader brought to this point will not be discouraged: it is not in the values of military pay and subsistence or of "other money incomes currently earned" that the interest of this study resides, but in the over-all values and in the use made thereof. In the sense discussed, there is a firmer basis for confidence in the reliability of the over-all results.

This is probably the appropriate place to enter another disclaimer. The values recorded in the basic tables and most of the supporting data are expressed to the nearest hundred million rubles. This cannot be considered an indication of the precision of measurement claimed. Establishing a reliable guide to measurement accuracy would be a hopeless problem in view of the heterogeneity of the sources employed. The procedure employed is justified only by its convenience.

Original versus Revised Goals

The indicators to be presented are supposed to reflect the original goals of the Seven Year Plan. In all cases of conflicting data the criterion of choice has been selection of the alternative most likely to represent an original rather than a revised target. Minor examples of the kind of problem involved here are the estimates of the number of cooperative artisans and of the volume of income taxes paid by households in 1965. It has been assumed in this study that the absorption of the cooperative artisans into the state labor force which took place in 1960 was not part of the original Seven Year Plan program, but the amounts involved here are so small that even if the assumption is wrong the effect on household incomes would be of the order of considerably less than one per cent. The intention to dispense with direct income taxes on the population was announced in Khrushchev's report to the 21st Congress, but he indicated there that the details had not yet been worked out. The estimate of proceeds in 1965 adopted in this paper is based on the detailed timetable announced early in 1960. It is not likely that

the estimate is substantially different from that which was current in the Central Statistical Administration only a year earlier.

There are, however, two elements of public sector incomes where an error in distinction between original and revised targets may have considerable impact. These elements are the total size of the state budget and the volume of state and cooperative sector profits in 1965. More particularly, the issue is the derivation of two elements of Table C -- item 1.B, "retained profits of state enterprises and non-farm cooperatives," and item 3, "taxes and other payments out of incomes by enterprises to the budget." These items account for 9.6 and 69.4 per cent, respectively, of the consolidated net income of the public sector. Since public sector outlays are defined to be equal to public sector incomes, substantial errors in the items indicated have a sizable effect not only on Table C itself but also on Table D and, consequently, on an important part of the gross national product account.

In the process of estimating retained profits of the state-cooperative sector, total profits of the sector in 1965 are estimated very roughly in Appendix C as in the range 500 to 675 billion rubles.[1] The Soviet Minister of Finance, Garbuzov, has recently declared that total profits in 1965 would "exceed" 500 billion rubles.[2] Garbuzov's profits figure is, however, not directly comparable with the figures derived in Appendix C. The profits figure for 1955 which he compares with the 1965 target is identical with the 1955 entry in the net profits series of the 1959 and 1960 statistical handbooks.[3] In a detailed

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[1] All values in this study are expressed in old, pre-1961 rubles, equal to one-tenth of the new rubles introduced in 1961. Magnitudes expressed in new rubles in Soviet sources have been converted to old rubles at the indicated rate.

[2] Ekonomicheskaia gazeta, April 23, 1962.

[3] TsSU, Narodnoe khoziaistvo SSSR v 1959 godu, 1960, p. 799 and Narodnoe khoziaistvo SSSR v 1960 godu, 1961, p. 843. Hereafter, references to these yearbooks published by Gosstatizdat in Moscow are abbreviated to N. kh. with the year indicated in the volume title:

examination of these net profits data, Nancy Nimitz concludes that they represent "balance profits," rather than the "profits from sale of output" which enter the SNIP accounts, and that the former is smaller than the latter because of losses unrelated to production -- chiefly, losses in the operation of enterprise housing and social services.[1] The 1958 entry in the net profits series of the statistical handbooks is 201.1 billion rubles, as compared with SNIP 1956-1958's 210.5 billion.[2] If the proportion between the two held constant, Garbuzov's 1965 net profits figure would imply a SNIP counterpart "exceeding" 525 billions, at the lower end of the range estimated in Appendix C.

The date of Garbuzov's statement, April 1962, suggests the likelihood that he was referring to a revised 1965 target. Unfortunately, neither the size nor the direction of the difference between the original and revised goals is immediately apparent. The calculation of total profits in Appendix C is rough and the possibility of substantial error can certainly not be discounted. However, it should be noted that total profits do not enter directly into the 1965 accounts at any point. Retained profits are specified in Table C, but profits taxes are subsumed within the lumped sum of all current enterprise contributions to the state budget. The estimate of retained profits seems conservative: the 1959-1965 increase of the major element, retained profits of state enterprises (90 per cent of the 1958 total), is estimated as 100 per cent, or slightly less than the margin of increase of noncentralized investment outlays (Table G) which bear a close relation to retained profits.

N. kh. 1956, N. kh. 1958, N. kh. 1959, N. kh. 1960. The first volume in the series, published in 1956, and entitled Narodnoe khoziaistvo SSSR, is referred to as N. kh. 1955.

[1] SNIP 1956-1958, pp. 73-81.

[2] Ibid., Notes to Table 1, Part C, item C.1.c (p. 83) and Appendix Table C-2 (p. 101).

As for enterprise contributions to the state budget, these depend in turn on estimates of total budget revenues and the share of household payments. The latter estimate seems fairly secure and is, moreover, too small for any likely margin of error to affect the outcome sizably. Regrettably, this is not true of the accepted value of the total state budget. In an article published in the spring of 1960 Garbuzov wrote: "The volume of the state budget already now is 773 billion rubles and at the end of the Seven Year Plan is to be 1.2 trillion rubles."[1] Garbuzov was apparently referring to revenues, since his base of comparison, 773 billion rubles, is the planned 1960 volume of budget revenues.[2] A year after the appearance of this statement, in the fall of 1961, Garbuzov declared that "according to preliminary calculations the state budget of the USSR will reach 110 billion [new] rubles in 1965."[3]

It is not clear whether he was referring in the latter statement to revenues or expenditures, for in a previous paragraph he discussed both total expenditures and the structure of revenues. If he had expenditures in mind, the two statements could be consistent, since Soviet budgets traditionally allow for a revenue surplus. On the alternative assumption, the question is whether the second reference is to a revised 1965 goal. There is obviously considerable room for rounding error in comparing the two citations: "1.2 trillion rubles" is compatible with a value in the range 1150-1249 billion, while Garbuzov's second 1965 figure could perhaps be stretched to 1125 billion.

The consequences of choice among these figures are not

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[1] V. Garbuzov, "Resheniia piatoi sessii Verkhovnogo Soveta SSSR i zadachi finansovykh organov," Finansy SSSR, 1960, No. 5, p. 9.

[2] Izvestiia, October 31, 1959.

[3] Pravda, September 30, 1961, p. 3.

negligible, as already stated. While the absolute change in every entry in the accounts where change would be necessary would be the same, the relative impact is heaviest on one item -- "total other outlays," item 6.D of Table D. Evidence presented in Chapter IV relating to the uses of national income, Soviet-definition, in 1965 argues against the very high value of "total other outlays" implied by assuming that the 1965 budget revenues target is 1200 billion rubles. Partly on the basis of this evidence, in part because of the multiple uncertainties in comparing the two Garbuzov budget figures, the original 1965 goal for budget revenues has been taken to be 1150 billion rubles. At the appropriate points in the discussion to follow, the reader will be reminded of the consequences of alternative choices.

Prices

The income and product estimates of this study are valued at established prices, in current or constant prices of 1958. No attempt has been made to estimate income and product in so-called adjusted factor costs because of complete absence of information on subsidies and turnover taxes and their structure in 1965. With the exception of prices in retail trade, it is assumed in these accounts that the Seven Year Plan provides for no change in the level and structure of prices. A price decrease on the order of 5 per cent has been announced as planned for retail trade by 1965. The Plan also hints at possible cuts in procurement prices for some farm products.[1] However, not until the July 1960 Plenum of the Party's Central Committee was a review of wholesale prices of producers' goods actually ordered. This review was to have taken place in 1961-1962, but was subsequently postponed, and the change in wholesale prices is now to take place in 1963. There would thus appear to be justification for assuming constancy of the general price level in the Seven Year Plan period with the minor exception noted above.

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[1] See Appendix A, item 1.

Table A

INCOMES OF HOUSEHOLDS, 1958 AND 1965

	Billion rubles	
	1958	1965
1. Net income of households from agriculture (excluding wages of state employed farm labor and wages of labor hired by collective farms)		
A. Money payments by collective farms	51.9	70.0
B. Net income from sales of farm products	54.0	54.0
C. Net farm income in kind	107.3	134.2
D. Total	213.2	258.2
2. Wages and salaries, farm and nonfarm		
A. Money wages of workers and employees	511.0	790.0
B. Other wages and salaries	30.0	36.0
C. Total	541.0	826.0
3. Earnings of cooperative artisans	8.3	10.0
4. Incomes of armed forces		
A. Military pay	26.2	24.7
B. Military subsistence	15.2	14.3
C. Total	41.4	39.0
5. Other money incomes currently earned	41.0	63.4
6. Imputed net rent of owner-occupied dwellings	8.4	11.2
7. Statistical discrepancy	(-) 2.7	*
8. Total incomes currently earned	850.6	1207.8
9. Transfer receipts	99.4	165.4
10. Total incomes	950.0	1373.2

Note:

* Means not applicable. Statistical discrepancy for 1965 incorporated in Table B, items 2.C. and 7.

Sources:

Appendix A.

Table B

OUTLAYS OF HOUSEHOLDS, 1958 AND 1965

		Billion rubles	
		1958	1965
1.	Retail sales of goods for consumption		
	A. State and cooperative trade network	603.0	941.5
	B. Urban collective farm market	45.3	39.8
	C. Total	648.3	981.3
2.	Consumer services		
	A. Housing (including imputed rent)	14.0	20.2
	B. Trade union and other dues	8.5	12.0
	C. Other services	69.2	129.9
	D. Total	91.7	162.1
3.	Consumption of income in kind		
	A. Farm income in kind	106.0	132.6
	B. Nonfarm wages in kind	5.0	6.0
	C. Military subsistence	15.2	14.3
	D. Total	126.2	152.9
4.	Total outlays for consumption	866.2	1296.3
5.	Investment		
	A. Outlays on building materials	7.6	9.7
	B. Outlays on building services	5.7	7.6
	C. Farm investment in kind	1.3	1.6
	D. Total	14.6	18.9
6.	Total outlays for consumption and investment	880.8	1315.2
7.	Net savings	11.5	25.0
8.	Direct taxes	57.7	33.0
9.	Total outlays	950.0	1373.2

Sources:

Appendix B.

Table C

INCOMES OF PUBLIC SECTOR, 1958 AND 1965

		Billion rubles	
		1958	1965
1.	Net income retained by economic organizations		
	A. Retained income of collective farms	27.4	58.0
	B. Retained profits of state enterprises and nonfarm cooperatives	64.9	128.0
	C. Total	92.3	186.0
2.	Charges to economic enterprises for special funds		
	A. For social insurance budget	32.6	50.4
	B. For training of workers, research	5.2	6.0
	C. Total	37.8	56.4
3.	Taxes and other payments out of incomes by enterprises to budget, including customs duties	519.4	925.0
4.	Allowance for subsidized losses	(-) 44.0	(-) 22.0
5.	Consolidated total charges against current product, net of depreciation	605.5	1145.4
6.	Depreciation	81.0	130.0
7.	Consolidated total charges against current product	686.5	1275.4
8.	Transfer receipts	69.2	58.0
9.	Consolidated net income	755.7	1333.4

Sources:

Appendix C.

Table D

OUTLAYS OF PUBLIC SECTOR, 1958 AND 1965

	Billion rubles	
	1958	1965
1. Communal services		
A. Health care	44.3	76.3
B. Education, excluding science	63.6	132.4
C. Other	0.9	1.5
D. Total	108.8	210.2
2. Government administration [a]	12.0	15.0
3. Gross investment		
A. Fixed capital	325.3	595.7
B. Inventories	69.0	74.0
C. Total	394.3	669.7
4. Internal security [a,b]	15.0	17.0
5. Military pay and subsistence	41.4	39.0
6. Other outlays		
A. Other defense (budget) [a,c]	49.2	..
B. Science	20.1	..
C. Remainder, including statistical discrepancy	15.5	
D. Total	84.8	217.1
7. Consolidated total value of goods and services, exclusive of sales to households	656.3	1168.0
8. Transfer outlays	99.4	165.4
9. Consolidated total outlays	755.7	1333.4

Notes:

.. Means data not available.
[a] Gross of capital outlays also included in item 3.A.
[b] Ministry of Internal Affairs, Committee on State Security.
[c] Excluding pensions.

Sources:

Appendix D.

Table E

GROSS NATIONAL PRODUCT ACCOUNT, 1958 AND 1965

	Billion rubles	
Incomes	1958	1965
1. Total income of households currently earned	850.6	1207.8
2. Consolidated charges of public sector against current product, net of depreciation	605.5	1145.4
3. Net national product	1456.1	2353.2
4. Depreciation	81.0	130.0
5. Gross national product	1537.1	2483.2
Outlays		
6. Total outlays of households on goods and services for consumption and investment	880.8	1315.2
7. Consolidated total value of goods and services disposed of by public sector, exclusive of sales to households	656.3	1168.0
8. Gross national product	1537.1	2483.2

Sources:

Incomes from Tables A and C, outlays from Tables B and D.

Table F

GROSS NATIONAL PRODUCT BY USE, 1958 AND 1965

	1958		1965	
	Billion Rubles	Per Cent[a]	Billion Rubles	Per Cent
1. Retail sales to households				
A. State and cooperative network	603.0	39.2	941.5	37.9
B. Urban collective farm market	45.3	2.9	39.8	1.6
C. Total	648.3	42.2	981.3	39.5
2. Consumption of income in kind				
A. Farm income in kind	106.0	6.9	132.6	5.3
B. Nonfarm wages in kind	5.0	0.3	6.0	0.2
C. Military subsistence	15.2	1.0	14.3	0.6
D. Total	126.2	8.2	152.9	6.2
3. Services				
A. Housing, including imputed rent	14.0	0.9	20.2	0.8
B. Dues	8.5	0.6	12.0	0.5
C. Other services	69.2	4.5	129.9[b]	5.2
D. Total	91.7	6.0	162.1	6.5
4. Total household outlays for consumption	866.2	56.4	1296.3	52.2
5. Communal services				
A. Health care	44.3	2.9	76.3	3.1
B. Education, excluding science	63.6	4.1	132.4	5.3
C. Other	0.9	0.1	1.5	0.1
D. Total	108.8	7.1	210.2	8.5
6. Gross investment				
A. In fixed capital				
(i) By public sector	325.3	21.2	595.7	24.0
(ii) By households	14.6	0.9	18.9	0.8
(iii) Total	339.9	22.1	614.6	24.8
B. In inventories	69.0	4.5	74.0	3.0
C. Total gross investment	408.9	26.6	688.6	27.7
7. Government administration	12.0	0.8	15.0	0.6
8. Internal security	15.0	1.0	17.0	0.7

Table F (continued)

		1958		1965	
		Billion Rubles	Per Cent	Billion Rubles	Per Cent
9.	Military pay and subsistence	41.4	2.7	39.0	1.6
10.	Other defense (budget), current outlays on science, and remainder, including statistical discrepancy	84.8	5.5	217.1	8.7
11.	Gross national product	1537.1	100.0	2483.2	100.0

Notes:

[a] Minor discrepancies between totals and sums of components due to rounding.

[b] Includes statistical discrepancy for household account.

Sources:

Tables B and D.

Table G

GROSS AND NET FIXED CAPITAL INVESTMENT AT 1958 PRICES, 1958, 1959-1965, AND 1965

	Billion rubles		
	1958	1959-1965	1965
1. Gross capital increments			
A. State-cooperative sector			
(1) Investment at estimate prices			
(a) Centralized	199.1	1955	352.4
(b) Noncentralized	40.4	443	85.0
(c) Project-making outlays	5.6	65	13.2
(d) Total	245.1	2463	450.6
(2) Investment at 1958 prices			
(a) Centralized and noncentralized	229.9	2306	420.6
(b) Project-making outlays	5.1	50	10.2
(c) Change in unfinished construction	(+)1.2	..	..
(d) Adjustment for overstatement	(-)8.3	(-)82	(-)15.1
(e) Gross increment	227.9	2274	415.7
B. Collective farms			
(1) Investment	30.0	340	66.6
(2) Change in unfinished construction	(-)1.1	..	..
(3) Gross increment	28.9	340	66.6
C. Private housing	26.5	265	35.0
D. Net increment of livestock, all sectors	5.0	45	7.7
E. Total gross increments	288.3	2924	525.0

Table G (continued)

	Billion rubles		
	1958	1959-1965	1965
2. Capital repairs			
A. State-cooperative sector	62.0	586	102.9
B. Collective farms	3.8	50	7.6
C. Private housing	6.0	50	8.0
D. Total	71.8	686	118.5
3. Depreciation			
A. State-cooperative sector	79.3	724	124.4
B. Collective farms	9.0	100	19.0
C. Private housing	9.1	78	12.7
D. Total	97.4	902	156.1
4. Losses of fixed capital; scrap value and underamortization of retirements	30.0	267	45.0
5. State-cooperative sector capital repairs financed from sources other than amortization allowances	15.3	133	23.2
6. Net investment, item 1.E plus 2.D less the sum 3.D, 4 and 5	217.4	2308	419.2
7. Net investment, adjusted estimate	205	2125	395

Note:

.. Means data not available.

Sources:

Appendix E.

II. GROSS NATIONAL PRODUCT BY USE AT PREVAILING PRICES

This chapter summarizes the national income and product accounts for 1965, which are set out in Tables A through F, compares 1965 with pre-Plan years, and presents additional estimates to supplement those drawn from the basic GNP accounts.

STRUCTURE OF SECTOR INCOMES AND OUTLAYS

For comparison with the 1965 estimates, the structure of incomes and outlays in 1956-1958 has been computed from Nancy Nimitz's absolute data for those years. Tables 1-4 present the results.

Households

In Table 1, household incomes have been grouped in six categories: (1) all incomes from agriculture except (a) wages of hired labor on collective farms and (b) wages of labor in state agricultural enterprises; (2) wages and salaries included in the worker and employee[1] wage bill; (3) military pay and subsistence; (4) all other current incomes, including the statistical discrepancy (the discrepancy for 1965 is an entry on the outlay side), but excluding imputed rent on owner-occupied housing; (5) imputed rent; and (6) transfer incomes.

The major trends in income shares for the years shown can be characterized as follows: Over the entire period the relative importance of two income categories, the worker and employee wage bill and transfer incomes, shows a more or less continuous rise. While the share of imputed rent is stable or barely declining, the trend of the share of military pay and subsistence is sharply downward. Agricultural incomes declined relatively in 1957 but in 1958 more than made up the ground lost; the 1965 share is below that of 1957. Other current incomes rose in 1957, declined sharply in 1958, and are at roughly the same level in 1965.

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[1] The term "workers and employees" is a shorthand designation used throughout this study for wage and salary earners (rabochie i sluzhaschie).

Table 1

STRUCTURE OF HOUSEHOLD INCOMES, 1956-1958 AND 1965
(per cent)

	1956	1957	1958	1965
1. Incomes from agriculture of collective farmers, workers and employees from private plots, and individual peasants	21.3	19.4	22.4	18.8
2. Worker and employee wage bill	53.5	53.6	53.8	57.5
3. Military pay and subsistence	6.0	4.7	4.4	2.8
4. Other current wages, salaries, incomes, including statistical discrepancy[a]	9.5	10.7	8.1	8.0
5. Imputed rent	1.0	0.9	0.9	0.8
6. Transfer incomes	8.8	10.7	10.5	12.0
7. Total incomes[b]	100.0	100.0	100.0	100.0

Notes:

[a] Except for 1965, where statistical discrepancy calculated in outlays.

[b] Minor discrepancies between total and sums of components due to rounding.

Sources:

1956-1958 computed from SNIP 1956-1958, and 1965 from Table A below, as follows:

Item		
This table	SNIP 1956-1958, Table 1, Part A	SNIP 1965 Table A
1	1.c-e	1.D
2	1.a-b, 2a	2.A
3	4.c	4.C
4	2.b-c, 3, 5, 7	2.B, 3, 5
5	6	6
6	9.d	9
7	10	10

It is not difficult to see in this pattern a reflection of consciously sought directions of change in Soviet social-economic organization:

1. In agriculture in this period there began a steady conversion of collective into state farms, diminishing the role of incomes distributed as residual shares in a cooperative enterprise and augmenting the role of wages and salaries on the preferred model of the state employed urban factory worker. Simultaneously, there has been steady attrition of the private agricultural sector. These trends were momentarily reversed in the bumper harvest year of 1958 when shares of all components of agricultural incomes rose sharply, not only compared with 1957 but also with 1956. The Seven Year Plan re-establishes the desired pattern. A substantial transfer of manpower out of collective farms is projected while employment on state farms may well be planned to increase.[1] The total state employed labor force is to be expanded by more than a fifth. The estimation of agricultural incomes detailed in Appendix A suggests a planned increase in total private agricultural sector income of no more than 12 per cent.[2] Thus, despite the fact that income per collective farmer is planned to increase by 40 per cent while the average wage of workers and employees is to increase by 26 per cent, the share of the worker and employee wage bill is estimated to rise from 53.8 per cent in 1958 to 57.5 per cent in 1965 or by 6.9 per cent; agricultural incomes as a per cent of the total are estimated to decline from 22.4 to 18.8 per cent, a drop of 16 per cent.[3]

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[1] See below, pp. 124-128.

[2] Below, pp. 128-130.

[3] The estimates of agricultural income and output changes developed in Appendix A, item 1.A, imply the following changes in the structure of gross agricultural production at constant prices by sector of origin, in per cent:

Sector	1958	1965
Collective farms	55	58
State	15	22
Private	30	20
Total output	100	100

The share of collective farms is to rise moderately; the increase

2. One of the main guidelines of the transition to "full communism," according to party dogma, is a rapid increase in the so-called "social funds of consumption" (obshchestvennye fondy potrebleniia), an important element of which represents transfer payments. Of these, pensions and allowances are the largest element. Although receipts of interest on state bonds have declined sharply with the abolition of compulsory subscriptions and the suspension of debt service on most issues, and despite the decrease in the total volume of stipends in 1956-1958, the increase in pensions and allowances has been so rapid as to raise the share of transfer payments in 1957 and prevent a substantial drop in 1958. The Seven Year Plan apparently provides for an annual rate of growth of pensions and allowances that is below the extraordinary increase of 1957 but higher than that of 1958.

On the outlay side, as Table 2 shows, total household consumption expenditures rise continuously as a share of the total, the share of investment outlays fluctuates in a narrow band, while the share of transfer payments moves uninterruptedly downward. For 1965 the statistical discrepancy is identified as part of "other services" in consumption. Since the estimate of "other services" depends on that for savings, which in turn is little more than a guess, the statistical discrepancy could with equal reason be considered applicable to the savings entry. On the other hand, the estimated sharp absolute and relative decline of direct taxes is on considerably firmer ground, based on the detailed timetable of proposed abrogation of direct taxes on the urban population.[1] Within consumption outlays, it is not

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in the state farm share is sharp as is the decrease in the share of the private sector. It is interesting to compare these figures with estimates of the distribution of output in 1950 made by D. Gale Johnson and Arcadius Kahan: In 1950 collective farms accounted for 54 per cent of all output, state farms for only 7 per cent, and the private sector for 39 per cent. (Johnson and Kahan, "Soviet Agriculture: Structure Growth," in Joint Economic Committee, U.S. Congress, Comparisons of the United States and Soviet Economies, Part I, Washington, D.C.: U.S. Government Printing Office, 1959, p. 207.)

[1] In his speech to the 21st Congress on January 27, 1959, Khrushchev declared the tax reform impending but the details not yet worked out. They were made public 15 months later in a Khrushchev speech to the Supreme Soviet (Pravda, May 6, 1960).

Table 2

STRUCTURE OF HOUSEHOLD OUTLAYS, 1956-1958 AND 1965
(per cent)

	1956	1957	1958	1965
1. Retail sales for consumption	65.1	67.5	68.2	71.5
2. Consumption in kind	13.3	12.1	13.3	11.1
3. Services				
A. Housing	1.6	1.5	1.5	1.5
B. Other	7.6	7.8	8.2	10.4[a]
C. Total	9.2	9.3	9.7	11.8
4. Total consumption	87.6	88.9	91.2	94.4
5. Investment	1.4	1.2	1.5	1.4
6. Transfer payments				
A. Taxes	6.5	6.0	6.1	2.4
B. Savings	4.5	3.9	1.2	1.8
C. Total	11.0	9.9	7.3	4.2
7. Total outlays[b]	100.0	100.0	100.0	100.0

Notes:

[a] Including statistical discrepancy.

[b] Minor discrepancies between totals and sum of components due to rounding.

Sources:

1956-1958 computed from SNIP 1956-1958, and 1965 from Table B below, as follows:

Item		
This Table	SNIP 1956-1958 Table 1, Part B	SNIP 1965, Table B
1	1.c	1.C
2	3.d	3.D
3.A	2.a	2.A
3.B	2.b-d	2.B-C
4	4	4
5	5.d	5.D
6.A	8	8
6.B	7.d	7
7	9	9

surprising to find retail sales climbing as a share of all outlays while consumption in kind is falling after the 1958 spurt. Despite the fragility of the estimate of other services in 1965, it is probably safe to assume that the upward trend in the share of these outlays was also to continue.

The Public Sector

The relative decline of household transfer outlays is faithfully reflected in a drastic decline of transfer receipts as a share of total public sector incomes (Table 3). Among current incomes, subsidies in 1965 are assumed to decline sharply; the share of depreciation also falls while those of retained incomes and budget incomes rise.

While transfer receipts by households account for a larger share of total household incomes in 1965 than in 1958, their counterpart in public sector outlays, transfer payments, decline in relative size from 1958 to 1965 (Table 4). So do the shares of administration, internal security, and military pay and subsistence. While this is not surprising, the decline in the share of gross investment is.

As indicated earlier, while Nancy Nimitz's estimates of gross investment in 1956-1958 are computed as residuals -- that is, total public sector incomes less all public sector outlays other than gross investment -- this procedure could not be applied to the 1965 accounts. To link the 1956-1957 with the 1965 data, two gross investment shares in 1958 are shown in Table 4, the residual calculation from SNIP 1956-1958 and an independent calculation from Table D of this paper. The difference between the two presumably consists of any or a combination of the following: statistical discrepancy in the 1958 calculation of SNIP 1956-1958, errors in the independent estimate, omission in the independent estimate (for example, net foreign balance).

Footnotes to Table D call attention to a degree of double counting in the independent estimates of investment that should be noted and explained here. The possible double counting involves capital outlays in government administration, internal security and the military establishment. The independent estimates of gross fixed investment of the state sector derive from official investment statistics. SNIP

Table 3

STRUCTURE OF PUBLIC SECTOR INCOMES, 1956-1958 AND 1965
(per cent)

	1956	1957	1958	1965
1. Retained income of collective farms	2.6	2.2	3.6	4.3
2. Retained income of state enterprises and nonfarm cooperatives	5.2	6.7	8.6	9.6
3. Charges to enterprises for special funds	5.2	5.1	5.0	4.2
4. Depreciation	9.9	9.9	10.7	9.7
5. Subsidies	(-)4.9	(-)4.1	(-)5.8	(-)1.6
6. Budget incomes	67.7	67.4	68.7	69.4
7. Total, excluding transfer incomes	85.7	87.3	90.8	95.7
8. Transfer receipts	14.3	12.7	9.2	4.3
9. Total income[a]	100.0	100.0	100.0	100.0

Note:

[a] Minor discrepancies between totals and sums of components due to rounding.

Sources:

1956-1958 computed from SNIP 1956-1958, 1965 from Table C below, as follows:

Item		
This Table	SNIP 1956-1958 Table 1, Part C	SNIP 1965 Table C
1	1.a (adjusted)	1.A
2	1.b-c	1.B
3	2.c	2.C
4	7 (adjusted)	6
5	5	4
6	3.f, 4	3
7	8	7
8	9.c	8
9	10	9

The adjustment of SNIP 1956-1958 estimates consists of deducting collective farm depreciation allowances from item 1.a (collective farm retained income) and adding these amounts to item 7, depreciation. The adjustment is based on a statement by G. Kotov ("Ob ukreplenii nedelimykh fondakh v kolkhozakh," Ekonomika sel'skogo khoziaistva, 1960, No. 1, p. 25) that depreciation allowances accounted for 29.4 per cent in 1955-1957 and 29.6 per cent in 1958 of deductions from money income for "indivisible funds." For the latter, see SNIP 1956-1958, Appendix Table C-1.

Table 4

STRUCTURE OF PUBLIC SECTOR OUTLAYS, 1956-1958 AND 1965

(per cent)

	1956	1957	1958	1965
1. Communal services, excluding science	15.2	14.9	14.4	15.8
2. Administration and internal security	4.3	3.9	3.6	2.4
3. Gross investment				
A. Computed as residual, includes statistical discrepancy	51.7	52.2	54.2	
B. Independent estimate	..	..	52.2	50.2
4. Military pay and subsistence	7.8	6.0	5.5	2.9
5. Other outlays				
A. Other defense (budget)	7.2	6.7	6.5	..
B. Current outlays on science	2.3	2.5	2.7	..
C. Total	9.5	9.2	9.2[a]	..
			11.2[b]	16.3[b]
6. Total, excluding transfer outlays	88.5	86.2	86.9	87.6
7. Transfer payments	11.5	13.8	13.1	12.4
8. Total outlays[c]	100.0	100.0	100.0	100.0

Notes:

.. Means not available.

[a] Excluding statistical discrepancy.

[b] Including statistical discrepancy.

[c] Minor discrepancies between totals and sums of components due to rounding.

Table 4 (continued)

Sources:

1956-1957 computed from SNIP 1956-1958, 1958 and 1965 from Table D below, as follows:

Item		
This table	SNIP 1956-1958 Table 1, Part D	SNIP 1965 Table D
1	1.d, less science	1.D
2	2, 3	2, 4
3A	5	3.C and 6.C
3B	..	3.C
4	*	5
5A	4, less pay and subsistence	6.A
5B	**	6.B
5C ǂ	..	6.D
6	6	7
7	7.d	8
8	8	9

ǂ Including statistical discrepancy.

* From SNIP 1956-1958, Table 1, Part A, item 4.c.

** Current outlays on science in 1956 assumed to represent same proportion of total outlays on science (N. kh. 1959, p. 805) as in 1958 (see Appendix D, item 1.B., below). Current outlays in 1957 obtained by interpolation between 1956 and 1958 figures.

values of administration, internal security, and defense are state budget outlays, published or estimated. Do the official investment statistics include investment in administration, internal security and the armed forces? Soviet sources are understandably reticent on this subject. A source cited by Norman Kaplan suggests that military and administration investment is included. The Soviet writer declared that "the plan of capital work serves as the basis for the planned increase of fixed capital of education, public health, art and also of the spheres of administration and defense."[1] The implication here is that in branch distributions of capital investment, investment in administration and in the armed forces are included with those in social cultural services.[2]

Are capital outlays included in the budget categories of "administration," "defense" and "internal security?" The available information here is equally scarce and the presumptive solution more tenuous. It is likely that capital outlays on administration are included in the budget appropriation in that category.[3] It seems clear that investment in munitions output -- that is, in plant and equipment for the production of armaments -- is not included in the budget allocation to "defense" but is an appropriation under "financing the national economy."[4] Similarly, investment in military research and development is most likely included with the budget appropriation to "science."[5] The rest is subject to guesswork. It is known, for

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[1] B. Smekhov, "Planirovanie kapitalnykh rabot," Planovoe khoziaistvo, 1951, No. 4, p. 83, cited in Norman Kaplan, Capital Investment in the Soviet Union, 1924-1951, The RAND Corporation, RM-735, November 28, 1951, p. 164.

[2] Kaplan presents evidence suggesting that this conclusion also holds for the middle 1930's. Ibid., p. 175.

[3] A. M. Aleksandrov, Gosudarstvennyi biudzhet SSSR, Moscow, Gosfinizdat, 1961, p. 409.

[4] Real SNIP, pp. 362-363.

[5] Nancy Nimitz, Soviet Expenditures on Scientific Research Since 1928, The RAND Corporation, RM-3384-PR, January 1963, pp. 12-13. Unless otherwise indicated, references to science outlays in the present study are to expenditures net of investment.

example, that additions to state reserves, which include what one Soviet writer has called "reserves of means of defense of a special nature,"[1] are at least partially financed from "financing the national economy."[2] What of military construction (airfields, missile sites, barracks, and the like)? Is military construction part of the "defense" appropriation or financed wholly or in part under "financing the national economy?" The answer is not known. Do capital outlays on internal security form part of the budget category? Since the last "internal security" appropriation released to the public dates from 1949,[3] it is not surprising that the answer to this question is also not clear.[4]

The impression gained from this highly inconclusive evidence is that the 1958 values of administration, internal security and defense in SNIP 1956-1958 are likely to include some capital outlays that are also included in the independent estimates of gross investment. It is difficult to imagine that even total double counting of investment in administration and internal security could be at all significant relative to any of the considerations advanced in this study. Such an assumption cannot be made as easily with respect to military construction. In short, the relevant qualification appears to be that military construction may be included in item 3.B and also in items 5.A and 5.C in Table 4.

The decline in the relative weight of gross investment between 1958 and 1965 should be viewed in the context of the sharp increase in the share of item 5.C in Table 4, total "other outlays" -- "other defense" (identified military expenditures less pensions, military pay

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[1] M. Z. Bor, Voprosy metodologii planovogo balansa narodnogo khoziaistva SSSR, Moscow: Izdatel'stvo Akademii nauk SSSR, 1960, p. 311.

[2] A. V. Bachurin, (ed.), Finansy i kredit SSSR, Moscow: Gosfinizdat, 1958, p. 148.

[3] SNIP 1949-1955, p. 172; SNIP 1956-1958, p. 118.

[4] In SNIP 1940-1948, p. 199, Bergson and Heymann state: "In general, it is believed that capital construction outlays [of the NKVD], are included under 'Financing the National Economy,' rather than under the main budget heading referring to NKVD appropriations." In Real SNIP (p. 361), Bergson appears to be less confident: after indicating that 1940 NKVD outlays exclude a construction item he concludes: "Very possibly, capital construction outlays of the NKVD were also financed this way in other years."

and subsistence), "science," and the residual which includes any statistical discrepancy. While total public sector outlays are shown as increasing by 76 per cent, "other current outlays" increase by 156 per cent.[1] The estimated change in this item is perhaps the most piquant finding resulting from the calculations of this study. It is necessary, however, to use some caution in interpreting this result. As an outlay residual, the 1965 entry is extremely sensitive to errors in the estimation of other public sector outlays and of total public sector incomes. The estimate of total public sector incomes is heavily dependent, in turn, on the value of total 1965 budget revenues. Here a caveat discussed earlier[2] should be recalled: The 1965 budget revenue target used in these accounts, 1150 billion rubles, is an interpretation of a statement by Garbuzov, citing 1.2 trillion rubles as the goal. It has been assumed that a later Garbuzov figure, 110 billion new rubles, is either a reference to outlays or a revised revenue goal. If these interpretations are wrong, the value of public sector incomes and outlays and the value of "other outlays" could be underestimated by as much as, roughly, 75 billion, or overstated by about 40 billion rubles. The relative impact of the error would be felt in all categories of outlays but would be heaviest on the share and rate of growth of "other outlays."

Furthermore, it should not be concluded that the value of "other outlays" represents in toto an earmarked allocation for military outlays and research and development. In addition to these, the category also includes a statistical discrepancy, and may possibly include a contingency fund. The annual state budgets have traditionally included such an allowance, the "Reserves of the Council of Ministers," which are usually expended through the budget category "Financing the National Economy." For a plan covering as long a period of time as

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[1] Between 1953 and 1958, budget outlays on "science" increased 170 per cent. In the same interval, the identified budget appropriation to "defense," declined by 13 per cent (N. kh. 1959, pp. 801, 804). This pattern suggests an additional justification for including outlays on science with military outlays in the residual.

[2] See above, pp. 14-15.

seven years, a contingency fund makes obvious sense. If such a reserve has been allowed for, a part of the increase of "other current outlays" may be intended for other categories, the most likely being investment. To that extent, and apart from offsetting errors, the share of gross investment in 1965 may be understated.

GNP: STRUCTURE AND GROWTH

Structural Change

The distribution of GNP by final use in 1956-1958 and 1965 is shown in Table 5. Differences in methodology between SNIP 1956-1958 and this study make some awkwardness in the construction of Table 5 unavoidable, but the elements of these differences have already been discussed, and the usefulness of the comparison should not be seriously impaired. A minor change is the separation of "science" from communal services and its inclusion with internal security and defense.[1] The chief difficulty concerns the differences in estimation of investment. Items 2.A and 2.B are based on independent calculations whose sums are shown in item 2.C, while item 2.D is gross investment computed as a residual by Nancy Nimitz. Item 5, the remainder cum statistical discrepancy, of course, applies to a distribution in which gross investment is represented by item 2.C, rather than 2.D.

There are several clear changes in major GNP shares from 1958 to 1965: (i) In consumption the trend of household outlays is clearly down compared with fluctuation in an uncertain direction in 1956-1958; contrastingly, the declining trend of communal services is reversed, but the offset to the decrease in household outlays is not sufficient to prevent a noticeable drop in the weight of total consumption. (ii) Having seen the sharp absolute and relative rise in outlays on internal security, defense and science in the context of public sector outlays alone, it is not surprising to find these expenditures

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[1] Apart from other reasons for this procedure, it can be argued that because of the increasing importance of research and development outlays, exclusion of "science" from communal services makes the latter's inclusion in the category of consumption more easily justifiable.

Table 5

STRUCTURE OF GNP BY USE, 1956-1958 AND 1965
(per cent)

	1956	1957	1958	1965
1. Consumption				
A. Household outlays, including income in kind	55.8	56.6	56.4	52.2
B. Communal services, excluding science	7.4	7.3	7.1	8.5
C. Total	63.3	64.0	63.5	60.7
2. Gross investment				
A. Fixed capital	20.9	21.0	22.1	24.8
B. Inventories	4.7	4.5	4.5	3.0
C. Total	25.6	25.5	26.6	27.7
D. Total gross investment as residual	26.2	26.6	27.6	..
3. Administration	0.9	0.9	0.8	0.6
4. Internal security, defense (budget), current outlays on science	9.6	8.6	8.2	11.0
5. Remainder, including statistical discrepancy	0.5	1.1	1.0	
6. GNP[a]	100.0	100.0	100.0	100.0

Notes:

.. Means not available.

[a] Minor discrepancies between totals and sums of components due to rounding.

Table 5 (continued)

Sources:

1956-1958. SNIP 1956-1958, Table 3, p. 11, with the following adjustments.

(i) Current outlays on science. See source for Table 4.

(ii) Investment in fixed capital represents the sum of household investment (SNIP 1956-1958, Table 3, items 9.a and 9.b) plus public sector investment as follows (billion rubles):

	1956	1957	1958
Centralized and noncentralized	181.0	203.5	229.9
Project-making outlays	4.8	5.0	5.1
Capital repairs	55.4	58.3	62.0
Collective farm	15.1	14.9	28.3
	256.3	281.7	325.3

The 1958 values are explained below in Appendix D, item 3.A, and reference there to sections of Appendix E. The 1956-1957 values were computed from the sources and by the methods indicated there.

(iii) Inventory investment is the sum of collective farm additions to the working capital fund (SNIP 1956-1958, Appendix Table C-1) and net changes in inventories in the rest of the public sector. An estimate of the change over the entire three year period and for 1958 alone is developed in Appendix D, item 3.D. The division of the 1956-1957 increment is that suggested by Nimitz (SNIP 1956-1958, Appendix Table D-4, sources for row 7).

1965. Table F.

increasing in 1965 as a share of GNP. The qualifications set out earlier with regard to the interpretation of this finding are equally relevant here. (iii) The share of gross fixed capital investment, which increased gradually in the period 1956-1958, also increases between 1958 and 1965. As a share of public sector outlays, gross investment declined between 1958 and 1965; investment as a proportion of GNP increases. However, the estimates of inventory investment, based on a rather arbitrary allocation of a total increase in stocks over the three-year period, are somewhat shaky and not much significance can be attached either to them or to entries in row 2.C of Table 5. Previous comments with respect to double counting of investment in administration, internal security and the armed forces apply here too.

Table 6 compares the share of households and the public sector in GNP, by incomes and outlays, for 1956-1958 and 1965 -- that is, a structural breakdown of the two halves of Table E and its 1956-1958 counterparts. Households continue their predomination on the output side, despite a decline in 1965. On the income side, however, the share of the public sector has been mounting and by 1965 tips the balance. The process in operation here is a roughly equivalent increase (in current price terms) in public and household sector incomes, offset by a change in the direction of net transfers between sectors: in 1956, the flow was from households and in 1957-1958, to households. This process is intensified in the interval between 1958 and 1965.

Rates of Growth

Indexes and the rates of growth implied by the indexes have been computed for major use categories of GNP and are arranged in Table 7. The calculations are based on GNP components at 1958 prices which, under the assumptions of the study, differ from current prices only by a small decline in retail prices. In addition, the underlying 1958 and 1965 values have been adjusted for understatement in relation to the net and gross investment estimates of Table G. As regards

Table 6

CONTRIBUTION OF HOUSEHOLDS AND PUBLIC SECTOR
TO GNP 1956-1958, 1965
(per cent)

	1956	1957	1958	1965
		Incomes		
Households	58.1	56.9	55.3	48.6
Public sector	41.9	43.1	44.7	51.4
GNP	100.0	100.0	100.0	100.0
		Outlays		
Households	56.7	57.4	57.3	53.0
Public sector	43.3	42.6	42.7	47.0
GNP	100.0	100.0	100.0	100.0

Sources:

1956-1958: Computed from SNIP 1956-1958, Table 2.
1965: Computed from Table E.

Table 7

INDEXES AND RATES OF GROWTH OF GROSS NATIONAL PRODUCT BY USE, ADJUSTED AND UNADJUSTED,[a] AT 1958 PRICES

	1965 Index numbers, 1958 = 100	Implied average annual rates of growth, per cent
1. Consumption		
A. Household outlays	155	6.5
B. Communal services	193	9.9
C. Total	160	6.9
2. Gross investment		
A. Fixed capital	179 (181)	8.7 (8.8)
B. Inventories	107	1.0
C. Total	168 (168)	7.6 (7.7)
3. Administration	125	3.2
4. Other outlays (internal security defense, science, etc.)	193	9.9
5. GNP	165 (165)	7.4 (7.4)

Note:

[a] Adjustments affect gross fixed investment (and, hence, total gross investment) and GNP. For these items, unadjusted results are shown in parentheses, adjusted figures without parentheses.

Sources:

Calculated from Table F with the following changes:

Revaluation at 1958 prices: Fifty billion rubles are added to 1965 household outlays on consumption and GNP, representing the difference between retail sales in 1965 at 1965 and at 1958 prices (N. kh. 1958, p. 103).

Adjustments: For gross fixed investment in Table F values from Table G are substituted: items 1.A.(2)(a), 1.A.(2)(b), 1.B.(1), 1.C., 1.D, and 2.D. Adjusted GNP is the sum of components

gross investment, the adjustment consists in writing up gross fixed investment from Table F to the level of Table G and is intended to add the value of (i) labor in kind contributions to investment on collective farms and in private housing construction, and (ii) livestock investment in the public sector, which do not enter into the SNIP accounts.

Parenthetically, the adjustments mentioned do not perceptibly alter the pattern of changes in the structure of GNP, as can be seen from Table 8. The effect of the adjustment is to lower the shares of consumption and its elements as well as "other outlays"; the share of administration and inventory investment is more or less unchanged, while the share of fixed capital investment is raised. The changes are slight: the largest absolute difference is one of 1.4 percentage points in the 1958 share of fixed capital investment.

To return to the consideration of rates of growth, Table 7 shows a rate of growth of GNP, adjusted or unadjusted, of 7.4 per cent. This rate of increase may be compared for various subperiods of the 1950's with estimates by Abram Bergson, Morris Bornstein, and Norman Kaplan.

For the period 1951-1955, Bergson's computations show a rate of growth of real GNP at prevailing prices of 8.2 per cent. At factor cost, measured in 1937 prices, 1950 prices, or a composite, the rate of growth is 7.6 per cent.[1] Bergson's measures of real expenditure terminate at 1955, but in a calculation of GNP by origin for 1950-1955 and 1955-1958, which Bergson qualifies as "tentative," he obtains rates of growth of 7.3 and 7.0 per cent, respectively,[2] as compared with 7.6 per cent for GNP by use in 1950-1955. For the period 1956-1958, Morris Bornstein has estimated a rate of growth of real GNP at factor cost (also from the origin side) of 7.4 per cent.[3] In a

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[1] Real SNIP, pp. 93, 210.

[2] Ibid,, p. 290.

[3] Morris Bornstein, "A Comparison of Soviet and United States National Product," Comparisons of the United States and Soviet Economies, Part II, pp. 390-391.

Table 8

STRUCTURE OF GNP BY USE, ADJUSTED AND UNADJUSTED, AT CURRENT PRICES, 1958 AND 1965

(per cent)

	1958		1965	
	Unadjusted	Adjusted	Unadjusted	Adjusted
1. Consumption				
A. Household outlays	56.4	55.3	52.2	51.2
B. Communal services	7.1	6.9	8.5	8.3
C. Total	63.5	62.3	60.7	59.5
2. Gross investment				
A. Fixed capital	22.1	23.5	24.8	26.1
B. Inventories	4.5	4.4	3.0	2.9
C. Total	26.6	27.9	27.7	29.0
3. Administration	0.8	0.8	0.6	0.6
4. Other outlays	9.2	9.0	11.0	10.8
5. GNP[a]	100.0	100.0	100.0	100.0

Note:

[a] Minor discrepancies between totals and sums of components due to rounding.

Sources:

Unadjusted shares from Table 5. Adjusted shares computed from absolute data of Table F with gross investment raised to the level of Table G, as explained in the Sources to Table 7.

similar aggregation of sector output indexes, a calculation by Norman Kaplan yields a rate of growth of 6.9-7.4 per cent per year.[1]

Thus, the computed rate of growth of GNP in 1959-1965 almost matches the rate of increase in 1951-1955 estimated by Bergson for GNP at factor cost but is lower than Bergson's estimate of the rate of growth of GNP at prevailing prices. The 1959-1965 rate appears to be about the same as the rates of increases in 1956-1958 of GNP at factor cost as computed by Bergson, Bornstein, and Kaplan. However, if, as Bergson's computations from the side of both origin and final use suggest, the rate of growth of the latter exceeds that of the former, the rate of growth of GNP by use in 1956-1958 may exceed that calculated for 1959-1965.

The calculations of this study are based on GNP at prevailing prices, no adjustments being made for the distorting effects of turnover taxes and subsidies. The rate of growth of Bergson's series at prevailing prices exceeds that of his series at factor cost. Is the direction of the inequality the same for GNP in 1959-1965? Probably not: despite the postulated decline in subsidies (Table C), the estimated small increase in turnover tax revenues planned in 1959-1965 (Appendix Table C-3) could imply a higher rate of growth of GNP at factor cost than at established prices. The effect of considering other elements of divergence between factor cost and established prices is not immediately apparent.[2] At any rate, the evidence adduced

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[1] Norman Kaplan, The Stock of Soviet Capital on January 1, 1960, The RAND Corporation, P-2248, March 15, 1961, p. 65.

[2] A case in point is presented by profits. On the one hand profits have been increasing at a rapid rate, and their magnitude now approaches the level of turnover tax proceeds. On the other hand, the distorting effects of profits are offset by the absence of an interest charge on capital and of land rent in the USSR, and it is the size of this difference which matters. Bergson decided not to adjust his calculations for profits because he estimated that difference as, in fact, not significant. (Real SNIP, pp. 138-143). Without extensive and possibly inconclusive calculations which have not been attempted here, it is impossible to say how the difference between profits and the sum of imputed capital and land charges in 1959-1965 compares with the difference in the 1950's.

does not show a pronounced expected change in the rate of growth between the 1950's and 1959-1965; the evidence also appears to refute any contention of a marked intended or expected retardation in the rate of growth.[1]

Rates of growth of the major use components of GNP have not been computed for 1956-1958, hence comparisons can be made only with those computed by Bergson for 1951-1955. Starting with consumption, the rates of growth of household outlays at any of the valuations employed by Bergson are considerably greater than that for 1959-1965. The range is 8.7 per cent (1937 factor cost) to 9.8 per cent (1950 prevailing prices)[2] as compared with 6.5 per cent in 1959-1965.

A more detailed view of household outlays is given in Table 9, which presents total and per capita consumption in 1958 and 1965 at constant prices of 1958. Retail sales for consumption are to increase by 59 per cent, and because total real consumption is planned to increase by a slightly smaller margin, the share of retail sales in the total rises moderately. Consumption in kind is estimated as increasing by little more than one-fifth and, in consequence, its share in the total declines. In contrast, the share of consumer services rises as a result of a sharp increase in the absolute volume.

A 55.4 per cent increase in total household outlays on consumption over a period of seven years implies an average annual rate of growth, compounded, of 6.5 per cent. Assuming an annual rate of population growth of 1.2 to 1.6 per cent, implied by the over-all increases shown in Table 9, per capita consumption increases would be expected at about 5 (4.8 to 5.2) per cent per year. This rate of growth is considerably smaller than those of the 1950's.

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[1] See Chapter IV for comparison of GNP with official national income data.

[2] Real SNIP, pp. 217 and 301-302.

Table 9

TOTAL AND PER CAPITA CONSUMPTION AT 1958 PRICES, 1958 AND 1965

	1958		1965		Per cent increase between 1958 and 1965
	Billion rubles	Per cent	Billion rubles	Per cent	
1. Household consumption outlays at 1958 prices					
A. Retail sales	648.3	74.8	1031.3	76.6	59.1
B. Consumption in kind	126.2	14.6	152.9	11.4	21.2
C. Consumer services	91.7	10.6	162.1	12.0	76.8
D. Total	866.2	100.0	1346.3	100.0	55.4
	1958		1965		
2. Population, average for year, millions	206.9		225.6 231.0		9.0 11.6
3. Per capita consumption, rubles	4187		5968 5828		42.5 39.2

Sources:

Outlays at 1958 prices: Table B, except that the 1965 value in row 1.C of Table B has been increased by 50 billion rubles, representing the difference between retail sales (state and cooperative network) in 1965 at 1958 and at 1965 prices (N. kh. 1958, p. 103).

Population: The average annual population in 1958 estimated from the reported census total for January 1959 (208.8 millions) and natural increase rates (N. kh. 1960, pp. 7, 60). For 1965 the lower figure is obtained by applying the expected relative increase, 9 per cent, cited by both M. Z. Bor, Voprosy metodologii planovogo balansa narodnogo khoziaistva SSSR, Moscow: Izdatel'stvo Akademii nauk SSSR, 1960, p. 293, and Iu. A. Belik, Natsional'nyi dokhod SSSR v semiletke, Moscow: "Znanie," 1959, p. 25. The higher figure is a projection by the Foreign Manpower Research Office, U.S. Bureau of the Census, as cited in CIA, Labor Supply and Employment in the USSR 1950-1965, October 1960, pp. 16, 26.

Per capita consumption: Total consumption divided by population. For 1965 the lower figure is obtained using the smaller population estimate, the higher figure using the larger population projection.

Average annual rates of growth, per capita consumption[1]

1951-1955	(at 1950 prices)	8.1 (8.0)
1953-1955	(at 1950 prices)	11.1 (9.4)
1956-1958	(at 1956 prices)	6.9 (6.4)
1959-1965	(at 1958 prices)	(5)

In contrast to the comparison of rates of growth of household consumption, total outlays on communal services including science grew much less rapidly in 1951-1955 than those on communal services excluding science in 1959-1965, 4.1 to 4.2 per cent,[2] compared with 9.9 per cent. Allowance for these outlays raises the rate of growth of per capita consumption in 1959-1965 by 0.4 of a percentage point. The corresponding reduction required in the rates of per capita consumption in 1956-1958 may be unaffected by the addition of communal services: in current prices, the rate of growth of total outlays on communal services including science is 7 per cent, compared with 8.3 per cent for total household outlays at 1956 prices.[3]

Gross investment as computed for the 1965 SNIP accounts is not directly comparable with the estimates of previous SNIP accounts. For this reason, and also because a more extended discussion is necessary, consideration of the rates of growth of investment is deferred to Chapter III.

The values of current outlays on science, military expenditures, and a remainder including the statistical discrepancy are joined inextricably in the 1965 GNP calculation. In 1951-1955 outlays on administration and internal security declined, while the rate of growth of the budget defense category is, at any valuation, no higher than 7.9 per cent. The rate of growth of the residual category in 1959-1965 is 9.9 per cent (Table 7). Again, caveats stated earlier apply here to the interpretation of this figure.

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[1] The growth rates in parentheses are of the conventional type calculated as the average implied by initial and terminal year data. The figures not in parentheses are calculated as the rate which yields the sum of the values for the period, given the initial year value. SNIP 1956-1958, p. 13.

[2] Real SNIP, pp. 217, 301-302.

[3] SNIP 1956-1958, Tables 3 and 4.

III. INVESTMENT AND THE CAPITAL STOCK

This chapter is largely a summary of and commentary on the investment estimates of Table G. A preliminary but, unfortunately, lengthy consideration of methodological problems is followed by a survey of the structure and growth of investment implied by Table G. Rates of growth of investment and the capital stock in 1959-1965 are compared with those of the 1950's. Intertemporal comparisons are also made for the rate of investment and capital-output ratios.

SOME METHODOLOGICAL PROBLEMS OF TABLE G

Table G presents a calculation of gross and net fixed capital investment in the base year 1958, in the terminal year of the plan, 1965, and cumulated for the Seven Year Plan period 1959-1965. In this calculation net investment is obtained by deducting capital consumption allowances of various kinds from the sum of gross increments and capital repairs. Before discussing the results of Table G, it is necessary to set out some methodological considerations.

Prices

The table heading identifies the investment figures of Table G as valued at 1958 prices. Although obviously dictated for gross investment in Tables D and F, the choice of 1958 prices needs further explanation. For analytical purposes, valuation at either of two sets of prices would be required, at either 1955 estimate prices or 1958 prices. Valuation at estimate prices would facilitate linkage with the data emerging from the January 1960 capital census and revaluation, the basis of which was estimate prices. Moreover, since the major components of investment appear in official statistical handbooks and in the Seven Year Plan documents in estimate price valuation, the task of calculating investment on this basis would appear to be greatly simplified, while the difficulties of employing an alternative valuation would be correspondingly magnified. On the other hand, the national income estimates of the Seven Year Plan probably employ 1958 prices, not only in the computation of net income by branch or sector of origin

but in the calculation of final output disposition, including investment.[1] If an investment calculation in 1958 prices was made by the planning authorities, any attempt to reconcile the GNP estimates with Soviet definition national income would have to bridge the gap between the two sets of prices.

Apart from the inherent usefulness of such an investment calculation, two other factors contributed to the choice of 1958 prices: First, certain elements of the calculation are difficult to establish in 1955 prices -- for example, capital repairs, whose price and cost movements are virtually unknown. Second, relative stability of investment prices in the period 1955-1958 insures more or less close correspondence between investment in the two sets of prices. The correspondence is demonstrably very close for new investment by the state and cooperative sectors. Estimates developed in Appendix E suggest that collective farm investment at 1958 prices exceeds the corresponding value at 1955 prices by about 6 per cent. A true current price valuation of new private housing is much more difficult to construct, but the obstacles have less to do with price changes than with differences between wholesale and retail prices, and with the valuation of labor in kind. The argument that the choice of prices makes little difference cannot be extended to livestock investment, for agriculture is the one branch of the national economy in this period in which price changes were significant.

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[1] That the national income indexes are at constant prices is clear from S. Sitarian, Natsional'nyi dokhod soiuznykh respublic, Moscow: Izdatel'stvo Moskovskogo universiteta, 1961, p. 31. The prices underlying the official "real" national income series are 1951 prices for the years 1951-1955, 1956 prices for 1956-1958, and 1958 prices thereafter. While it is conceivable that the methodological directives for the preparations of the Plan issued in 1957 (Formy i pokazateli k sostavleniiu perspektivnogo plana razvitiia narodnogo khoziaistva SSSR na 1959-1965 gody, a portion of which is translated in Cahiers de l'Institut de Science Économique Appliquée, Le Plan Septennal Soviétique, pp. 233-333) may have used 1956 prices for the computation of national income growth, it is likely that the 1958 agricultural price reforms alone would have impelled the planners to go over to 1958 prices.

Appraisal of the valuation of capital consumption allowances in Table G presents special difficulties because of Soviet reticence in detailing the procedures for their estimation. The procedure that is believed to be followed by the Central Statistical Administration (CSA), set out in the next section, has obvious crudities that conceivably could call for adjustments of various kinds. If the CSA has made such adjustments, no mention of them appears in Soviet sources. For example, depreciation in Table G is estimated in accordance with Soviet practice, on the basis of amortization allowances where computed, otherwise by the accepted estimating procedure. Soviet amortization allowances are computed on a straight line formula based on original cost of the asset. It goes without saying that in a period of changing investment costs, original cost depreciation will not yield the sum required by valuation of gross investment at constant prices. But with wide swinging price movements, neither will original cost depreciation provide a value consistent with investment in current prices.

The trend of Soviet investment prices may be characterized, roughly, as a sharp upward movement in the period since 1928, which was halted only in 1950, and a downward trend since then, which, according to Soviet sources, brought construction costs down to about 30 per cent over the prewar (1940) level[1] and machinery prices even lower, to about the prewar level.[2] Soviet official statistics portray an increase in the total capital stock, at 1955 prices gross of depreciation, between 1950 and 1960 almost as large as that between 1928 and 1950, 123 per cent compared with 173 per cent. The increase in the period 1950-1955 alone, the only one in Soviet history of decreasing prices, was 45 per cent.[3] To some extent, then, the fact that Soviet capital in 1958 originated partly in a period of rising costs and partly in one of falling or stable, relatively low, costs tends to diminish the

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[1] Sh.Ia. Turetskii, Planirovanie i problemy balansa narodnogo khoziaistva, Moscow: Ekonomizdat, 1961, p. 220.

[2] D. Kondrashev, "Razvitie sistemy optovykh tsen promyshlennosti," Den'gi i kredit, 1962, No. 6, pp. 28-29.

[3] N. kh. 1960, p. 85.

distorting influence of original cost depreciation relative to current or constant price alternatives.

Nevertheless, estimated allowances for amortization of original cost appear to be too low -- that is, they imply a service life of the capital stock that is considerably higher than that implied by known amortization rates (Appendix F). Undoubtedly, the downward bias also characterizes deductions for accidental losses of capital. Valuation of these losses is largely at depreciated original cost, since they consist mostly of assets already in use and only to a minor degree of current investment projects abandoned.

The effect of prolonged underamortization of an asset appears at the time of retirement in the form of a residual book value greater than the net proceeds from scrapping. The difference between the two values, recorded as an element of capital consumption, is a corrective to the excessively lower amortization allowances but can hardly be considered an adequate corrective. Whether this function is also served by the difference between item 6 and item 7 in Table G is not known at present.

To sum up, the valuation of the main element of capital consumption allowances in Table G, depreciation, is clearly inappropriate from a theoretical viewpoint. This may or may not be true of the capital consumption allowances in total.[1]

The Computation of Net Investment

The foregoing discussion of the valuation of capital consumption allowances raises the question of whether net investment has in fact

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[1] Appropriateness here is to be understood only as valuation consistent with the prices at which gross increments are valued. No judgment is intended on the theoretical propriety of this particular concept of capital consumption allowances. The measurement of capital and its consumption is still controversial in the Western literature. See, for example, E. F. Denison, "Theoretical Aspects of Quality Change, Capital Consumption and Net Capital Formation," Problems of Capital Formation, Princeton, N.J.: Princeton University Press, 1957, pp. 214-226.

been estimated in accordance with Soviet official procedure. Soviet national accounting, embodied in the "balance of the national economy" and its component balances, provides two methods of computing changes in the capital stock. According to Sobol', the first computation in Table 7 of the CSA's national balance system is at original cost net of depreciation and requires the deduction of depreciation (iznos), the scrap value of retirements, and losses of fixed capital from the sum of the value of net assets brought into use plus capital repairs.[1] Other reliable sources make it clear that in this calculation retirements are valued not just at the proceeds from scrapping but at the final depreciated value appearing on the enterprises balance sheet at the moment of withdrawal.[2] This value will be larger or smaller than the net scrap value depending on whether the asset has been underamortized or overamortized. Soviet sources leave no doubt that extensive underamortization is the rule.[3]

An appendix to the CSA's Table 7 is an alternative calculation at full original cost gross of depreciation: here retirements (instead of depreciation) and losses are deducted from just the value of new assets brought into use.[4] Allegedly, the first calculation is the basis for estimation of net investment in the national income accounts, the second serves as an approximate measure of changes in physical capacity.[5] The indexes of capital growth, both those published before the capital census and revaluation of January 1960[6]

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[1] V. A. Sobol', Ocherki po voprosam balansa narodnogo khoziaistva, Moscow, Gosstatizdat, 1960, pp. 210-211. Sobol' is chief of the Central Statistical Administration's Department of the National Economic Balance.

[2] I. Morozova, Balans narodnogo khoziaistva i metody ego postroeniia, Moscow: Gosstatizdat, 1961, p. 91; A. I. Petrov (ed.), Kurs ekonomicheskoi statistiki, 3rd edition, Moscow: Gosstatizdat, 1961, pp. 423-424.

[3] For example, see P. G. Bunich, Osnovnye fondy sotsialisticheskoi promyshlennosti, Moscow: Gosplanizdat, 1960, p. 137.

[4] Sobol', op. cit., pp. 220-221.

[5] Ibid., pp. 166, 172.

[6] N. kh. 1958, pp. 58-59.

and those published since, were computed from values gross of depreciation -- that is, from calculations of the second type. It would, therefore, appear that at least two different computations of net investment are required here. One is based on original cost net of depreciation, for reconciliation of the Soviet national income accounts with those presented in this Memorandum. The second is a valuation gross of depreciation for computation of capital stock changes.

In addition to depreciation, losses, and the net depreciated value of retirements, capital consumption allowances in Table G also include the value of capital repairs financed from sources other than amortization allowances. No explicit Soviet source reference can be supplied to justify this procedure, but a rationale can be developed.

As indicated, the calculation of net investment requires the deduction of annual depreciation and the net book value of retirements from the sum of gross capital increments plus capital repairs. If capital repairs are included with gross investment, they should also be accounted for in the capital consumption term of the equation. In principle, account is taken by computing amortization allowances according to a formula that includes expected capital repairs over the life of the asset. If planners were blessed with perfect foresight, total allowances over the actual life of the asset would be exactly equal to the cost of replacing the asset (less scrap value, if any) plus the sum of outlays on capital repairs. Of course, with a straight line amortization formula, in any given year, actual outlays on capital repairs could be more or less than the capital repair component of amortization allowances. Suppose capital repairs are an increasing function of asset age. Then actual outlays will be less than the component of amortization allowances when the asset is new, greater when the asset is old. If the rate of growth of investment is high, if relatively new assets predominate in the stock, the annual accounting installment of amortized repairs in the economy as a whole will tend to be greater than actual outlays.

However, Soviet practice for khozraschet enterprises in the state sector is to earmark a portion of amortization allowances to finance a part of outlays on capital repairs, the remainder of actual outlays being financed largely from the government budget. The fraction of amortization allowances devoted to capital repairs is set arbitrarily and bears no relation to the place of capital repairs in the amortization formula. There does not appear to be any calculation of the annual value of the accounting share of amortization allowances representing amortized capital repairs.

Theoretically, then, actual outlays should be less than the accounting value; in practice, actual outlays are greater than the share of amortization allowances earmarked to finance repairs. Moreover, Soviet sources lead one to believe that the remaining portion of amortization allowances designed to finance replacement has for many years not been adequate to the task, hence that earmarked allowances for repairs represent, at least in part, allowances for replacement, which raises the gap between actual outlays and the accounting value of amortized repairs. Therefore, in order to minimize the understatement of depreciation, the CSA would have to add to depreciation allowances the value of capital repairs financed from other sources. Alternatively, the value of capital repairs included with gross investment would have to be written down.

Amortization allowances are not computed in the private sector and in budget organizations. For capital of these sectors, one would, presumably, add actual outlays on capital repairs to an estimate of the amortized value of the assets' original cost alone to obtain a value analogous to the sum of amortization allowances plus other capital repairs for khozraschet enterprises. Computed in this manner, net investment would be methodologically consistent with the procedure which, it has been hypothesized, is employed by the CSA in its national income accounts. By the same token, this value of net investment would be different from the corresponding capital stock increment for the given year.

The first of these suppositions appears tenable, the second is not. Proceeding in the manner described, it is possible to reconstruct the official 1959 and 1960 net investment values with a relatively small margin of error (see Appendix Table F-1). An official figure for 1958 has not been made public but must be estimated from the 1958 value. The 1958 reconstruction in Table G (item 6) overstates the estimated official value by about the same margin as does the 1959 reconstruction. It may be noted that these findings also justify the inclusion in capital consumption allowances in Table G of (a) capital repairs of khozraschet enterprises financed from sources other than amortization allowances, and (b) capital repairs of budget organizations and the private sector; otherwise reconstructed net investment would be far higher than the actual or presumed official values.

On the other hand, the official 1960 net investment figure is virtually identical to the 1960 increment of the capital stock at estimate prices gross of depreciation. The details of this calculation are given in Appendix F where an attempt is also made to demonstrate that this equality is consistent with the hypothesized CSA estimating procedures. On the basis of this demonstration, the values of item 7 in Table G are assumed to be suitable for estimation of both net investment as an end use of national income and of changes in the capital stock. Since the propriety of the latter use of item 7 in Table G rests on data for only a single year, 1960,[1] the results obtained must be labelled tentative.

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[1]The comparison between national income, net investment, and capital increment cannot be extended to 1959 because, although the 1959 net investment datum has been given, the 1959 increment has not been published. Further, in a detailed examination of the capital census data, Norman Kaplan concludes that the 1959 increment in the official, post-census capital index series, even if published, would be unusable because it absorbs the entire statistical discrepancy in the series from 1928 to 1960 (Norman Kaplan, Soviet Capital Formation and Economic Growth, forthcoming, Chapter 6).

Scope of Investment

In terms of coverage of outlay components, Table G departs from the ideal in a number of respects with varying significance:

(a) Private housing investment in 1958 is gross of increments of unfinished construction. No information is available on the size of or changes in unfinished construction in either 1958 or the Seven Year Plan period. For the same reason (lack of information), it has been necessary to assume no change in 1959-1965 in the level of unfinished construction by the other sectors of the economy as well.

(b) No attempt has been made to estimate private sector investment in production structures (sheds, storehouses, and so forth). The private construction of dachas, or summer residences, is not included in the official statistics of the value of private housing investment[1] and presumably also from the reported volume of construction in physical units. Whether dacha construction is independently estimated by the CSA for the national balances is not known.

(c) Investment by fishing cooperatives is also omitted from Table G, but the 1958 value of this investment was significant, 0.2 billion rubles.[2]

(d) Total gross investment may be understated because the categories embraced by the livestock investment estimates are limited to cattle, hogs, sheep, and goats. Total gross investment is clearly understated because livestock investment has been estimated on a net rather than gross basis. It is not clear, however, that the estimated livestock increments are an appropriate component of the net investment calculation, depending on whether the CSA computes depreciation or retirements.

STRUCTURE AND GROWTH OF INVESTMENT, 1958-1965

The data of Table G are condensed and summarized for convenience in examination in Tables 10 and 11, showing, respectively, the

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[1] TsSU, Kapital'noe stroitel'stvo v SSSR, Moscow: Gosstatizdat, 1961, p. 8.

[2] Ibid., pp. 40 and 152.

Table 10

STRUCTURE OF INVESTMENT, EXCLUDING LIVESTOCK,
BY SECTOR, 1958 AND 1965
(per cent)

	Sectors			
	State-cooperative	Collective farms	Private housing	All sectors
1. Gross investment[a] excluding capital repairs				
1958	80.6	10.3	9.1	100.0
1965	80.9	12.5	6.6	100.0
2. Gross increments net of depreciation				
1958	80.6	9.8	9.7	100.0
1965	81.3	12.1	6.6	100.0[b]

Notes:

[a] Gross of increments of unfinished construction.

[b] Minor discrepancy between total and sum of components due to rounding.

Sources:

Table G: gross investment excluding capital repairs computed from items 1.A.(2)(a) plus 1.A.(2)(b), 1.B.(1), 1.C; gross increments net of depreciation from items 1.A.(2)(e), 1.B.(3), 2.C., plus capital repairs by the sector (item 2), less depreciation -- items 3.A. plus 5, 3.B. through 3.D.

Table 11

AVERAGE ANNUAL RATES OF GROWTH OF INVESTMENT BY SECTOR
IN THE SEVEN YEAR PLAN PERIOD
(per cent)

	Sectors			
	State-cooperative	Collective farms	Private housing	All sectors
1. Investment excluding livestock				
A. Gross investment[a] excluding capital repairs	9.0	12.1	4.1	9.0
B. Capital repairs	7.5	10.4	4.2	7.4
C. Gross investment[a] including capital repairs	8.7	11.9	4.1	8.7
D. Gross increments, net of depreciation	9.6	12.8	3.8	9.5
2. Net investment, all capital	..	..	..	9.8

Notes:

.. Means not available.

[a] Gross of increments of unfinished construction.

Sources:

Table G: item identification for gross investment excluding capital repairs and gross increments net of depreciation is given in the sources to Table 10; capital repairs are found in item 2 of Table G, net investment in item 7.

structure and rate of growth of investment. In Table 10 the structure of investment excluding livestock is computed by sector for gross investment excluding capital repairs, and for gross increments net of depreciation alone. For visual ease, the distribution of gross investment by sector is shown only for investment excluding capital repairs; the pattern for gross investment including capital repairs is much the same. Livestock investment is excluded because of the absence of information on sectoral changes in herds during the Seven Year Plan period. Lack of sectoral data for both the base year and the Plan period explains the failure to deduct capital consumption allowances other than depreciation in the calculation of the structure of net investment.

If the calculations are correct, moderate changes are planned or expected in the structure of investment by sector. The rise in the share of the state and cooperative sector in gross investment is slight; the sector's share in net investment increases by less than a percentage point. In both gross and net terms the weight of collective farm investment increases. Together, the state-cooperative and collective farm sectors are to account in 1965 for 93.4 per cent of gross and net investment, as against 90.9 per cent of gross investment and 90.3 per cent of net investment in 1958. Correspondingly, the share of private housing declines. The relative decline of the private sector would undoubtedly be even more marked if the data permitted the inclusion of livestock investment by sector.[1]

Table 11, giving average annual rates of growth, is arranged somewhat differently. Rates of increase are computed for gross investment including and excluding capital repairs, since the differences here are significant. In addition, sectoral growth rates have been calculated for gross increments net of depreciation alone. In all of these calculations, livestock investment is excluded. The rate of growth of net investment in all capital is shown for the economy as a whole.

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[1] On changes in private livestock investment see Appendix A, item 1.A.

Total gross investment excluding livestock is estimated as increasing by 9.0 per cent per annum with capital repairs excluded; the rate of growth of capital repairs is 7.4 per cent, lowering the rate of increase of total gross investment by three-tenths of a point. The state-cooperative sector rates of growth of gross investment are apace with total investment, hence the stability of its share in the total. The rate of growth of collective farm investment is considerably higher than, and that of private housing far below, the rate of growth of total gross investment. This pattern also characterizes the sectoral rates of gross increments net of depreciation, the nearest approach we can muster to a sectoral view of net investment. In every case, excluding only private sector investment, the rate of growth of this surrogate for net investment is greater than that of the gross counterpart. Of course, it is the much slower rate of growth of capital consumption allowances that accounts for the gap between total gross and net investment growth rates.

RATE OF GROWTH OF INVESTMENT AND CAPITAL STOCK, 1950-1965

The estimated average annual rate of growth of gross investment including capital repairs is 8.7 per cent; it is 9.0 per cent, excluding repairs; the rate of growth of total net investment is 9.8 per cent. How do these rates of growth compare with those of the recent past? Table 12 tabulates gross investment in the period 1950-1958 by sector, excluding livestock investment.[1] On the basis of these data, rates of growth have been calculated and are arranged in Table 13. The conclusions drawn from Table 13 can be approximate only, for the gross investment values of Table 12 are deficient in several respects. First, the values of private housing investment in the years 1951 through 1954 are not given in the source but are estimates obtained by curvilinear interpolation between official

[1] Livestock investment could be computed in net terms, since data are available for herds at the end of the year, but information on gross additions to herds is not available.

Table 12

GROSS INVESTMENT, EXCLUDING LIVESTOCK AND CAPITAL REPAIRS
BY SECTOR, AT 1955 PRICES, 1950-1958
(billion rubles)

	1950	1951	1952	1953	1954	1955	1956	1957	1958
1. Collective farms[a]	7.5	9.2	10.7	11.8	14.4	21.2	22.6	22.0	28.4
2. Private housing	7.0	8.0	9.1	10.4	11.9	13.6	15.2	20.5	26.5
3. State-cooperative sector[b]									
A. Gross of increments of unfinished construction	96.3	108.5	121.4	127.4	150.1	164.6	191.2	215.8	245.2
B. Net of increments of unfinished construction	..	94	106	115	138	156	181	200	246.4
4. Total, all sectors									
A. Gross of increments of unfinished construction	110.8	125.7	141.2	149.6	176.4	199.4	229.0	258.3	300.1
B. Net of increments of unfinished construction in state-cooperative sector	..	111	126	137	164	191	219	243	301.3

Notes:

.. Means not available.

[a] Including fishing collectives.

[b] Including project-making outlays.

Sources:

Collective farms: TsSU, Kapital'noe stroitel'stvo v SSSR, Moscow: Gosstatizdat, 1961, p. 40.
Private housing: Ibid., pp. 188-189. Investment in 1951-1955 cumulated, 1956, 1957, 1958 given explicitly in source, investment in 1950 and 1955 implied by indexes. Values for 1951 through 1954 estimated from 1950, 1955 and 1951-1955 figures.
State-cooperative sector:
A. Gross of increments of unfinished construction. Ibid., p. 40.
B. Net of increments of unfinished construction. Value of unfinished construction at the end of each year in the interval 1950-1958 given in ibid., p. 126. Except for the 1958 increment, the figures in the source are given to the nearest billion rubles, hence the omission in this row of the table of digits to the right of the decimal place.

Table 13

AVERAGE ANNUAL RATES OF GROWTH OF TOTAL GROSS INVESTMENT, EXCLUDING LIVESTOCK AND CAPITAL REPAIRS, AT 1955 PRICES

(per cent)

	Total gross investment	
	Including increments of unfinished construction	Net of increments of unfinished construction in state-cooperative sector
1951-1955	12.5	..
1956-1958	14.6	16.4
1951-1958	13.3	..
1952-1955	12.2	14.5
1952-1958	13.2	15.3

Note:

.. Means not available.

Sources:

Computed from Table 12.

values for 1950 and 1955. More important is the problem of increments of unfinished construction. Because of data gaps, collective farm and private housing investment could not be adjusted for changes in unfinished construction. The data on unfinished construction in the state-cooperative sector are defined in the source to be at "actual cost to the builder," hence, may distort slightly the desired picture of growth at 1955 prices.

Despite these data deficiencies, the margin of difference between rates of growth of gross investment as shown in Table 13 and those of Table 11 is so large that a general conclusion is inescapable: gross investment in the 1950's increased more rapidly, probably considerably more rapidly, than is planned or expected in the period of the Seven Year Plan.

Calculations of net investment along the lines of Table G for years before 1959 have not been published in the Soviet Union, nor have any independent calculations been made in the West. One need not seek far for the reasons behind lack of interest in the West -- the Soviet use of capital indexes based on full original cost and with no absolute values provided, the admitted inadequacy of Soviet amortization norms, and the absence until recent years of national income magnitudes. At any rate, no attempt will be made here, either. Instead of net investment, capital stock data will be examined.[1]

The basis of the following comparisons of capital stock growth rates is the assumption, discussed earlier and elaborated in Appendix F, that net investment as computed by the CSA in recent years for the national income accounts is identical with the increment in the capital stock at values gross of depreciation. On this assumption, the value of the total capital stock at the beginning of the Seven

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[1] There is no necessary relation between the rate of growth of net investment and that of the capital stock. Given a constant annual rate of growth of net investment, the rate of growth of the capital stock is unknown unless at least one capital value is supplied and, in any case, need not coincide with the rate of increase of net investment. This will occur only if the rate of growth of the capital stock is constant.

Year Plan period (January 1, 1959) may be estimated as 2740 billion rubles and the value at the end of the period (January 1, 1966) as 4865 billion[1] -- 78 per cent greater, implying an average annual growth rate of 8.5 per cent.[2]

This growth rate may be compared with those implied by the post-revaluation indexes of capital stock at 1955 prices, gross of depreciation.[3]

Intervals (1 January of each year)	
1951-1956	7.7
1956-1960	9.0
1951-1960	8.3
1959-1966	8.5

It should be noted here that, according to Norman Kaplan, the post-revaluation index is so constructed that the 1959 increment includes a sizeable statistical discrepancy.[4] By the same token, the implied rates of growth are also affected, although the impact is lessened the longer the interval considered. Kaplan computes the rate of growth in 1951-1959 as 8.4 per cent; although he does not make the calculation, his estimates imply a rate of increase in 1956-1959 of 9.7 per cent.[5]

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[1] The January 1, 1960 value of the stock was 2965 billion rubles (N. kh. 1960, p. 86) while net investment in 1959 was 225 billion (ibid., p. 154). Net investment cumulated for 1959-1965 is estimated in Table G as 2125 billion rubles.

[2] As already noted (see note 1, above, p. 64), the rates of growth of net investment and capital stock need not coincide. Given the January 1, 1959 capital value and the rate of increase of subsequent investment, the rate of growth of the capital stock in 1959-1965 is, in fact, not constant but increasing. The cited rate of 8.5 per cent should be understood as an average, equivalent to that rate of growth that yields the cumulated total of annual capital values implied by the net investment values.

[3] N. kh. 1959, p. 66, and N. kh. 1960, p. 85.

[4] See above, note 1, p. 56.

[5] Tables 6.4 and 6.5 of Chapter 6 in Kaplan's Soviet Capital Formation and Economic Growth (forthcoming).

Whatever the rate of growth for 1956-1959, the general conclusion to be drawn here is quite different from the one with respect to gross investment. Gross investment growth rates were far higher in the 1950's than in the Seven Year Plan period. In contrast, the rate of growth of the capital stock in only one period (1956-1959) is (probably) higher than the estimated rate for 1959-1965.

CAPITAL AND OUTPUT 1950-1965

The preceding discussion has concentrated on investment and capital. This section is concerned with the relation to output, first with the share of resources devoted to investment, the rate of investment, then with the relation between capital and the output to which it gives rise.

The Rate of Investment

We may begin by considering the indexes of investment-output ratios, or rates of investment, shown in Table 14. Indexes of fixed capital investment, net and gross, and of total net investment are divided by indexes of output -- Soviet-definition national income as well as gross national product, as appropriate.

The gross and net fixed capital investment values are those of Table G. For consistency, the GNP values of Tables E and F have been adjusted for the small planned change in retail prices, for omission of the value of investment contributions by labor which are either paid in kind (collective farm labor) or represent the unpaid services of prospective owners (private housing), and for livestock investment (net of household livestock investment, which is already accounted for). These adjustments[1] raise the 1958 level of GNP by 28.4 billion rubles or 1.8 per cent, the 1965 level of GNP at 1958 prices by 44.0 billions or 1.7 per cent. The rate of growth of GNP, expressed to a tenth of a percentage point, is unaffected.

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[1] They are the same as those incorporated in Tables 7 and 8 in Chapter II.

Table 14

INVESTMENT AND OUTPUT, 1958 AND 1965

	Billions of rubles at 1958 prices		Indexes, 1958=100	Implied annual rate of growth, 1959-1965, per cent
	1958	1965	1965	
1. Fixed capital investment				
A. Net	205	395	193	9.8
B. Gross, including capital repairs[a]	363.3	650.9	179	8.7
C. Gross, excluding capital repairs[a]	291.5	532.4	183	9.0
2. Output				
A. National income utilized, Soviet concept	1233	2030	165	7.4
B. Gross national product (GNP)	1565.5	2577.2	165	7.4
	Per cent			
3. The rate of investment	1958	1965		
A. Net investment divided by				
1. National income	16.6	19.5	117	2.3
2. GNP	13.1	15.3	117	2.3
B. Gross investment divided by GNP				
1. Investment including capital repairs[a]	23.2	25.3	109	1.2
2. Investment excluding capital repairs[a]	18.6	20.7	111	1.5

Note:

[a] Excluding livestock investment.

Table 14 (continued)

Sources:

1. Investment: From Table G: net investment, item 7; gross investment excluding capital repairs, items 1.A.2(a), 1.A.2(b), 1.B.(1), and 1.C.; gross including capital repairs, add item 2.D.

2. Output: National income from sources for item C, Table 18, in Chapter IV. GNP from Table E, revalued and adjusted as described in the sources to Table 7.

No matter what the measure of investment, net or gross, or measures of output, the calculations of Table 14 indicate a larger proportion of resources devoted to investment in 1965 than in 1958. This is particularly marked in the rate of net investment, which reflects the slower rate of growth of capital consumption relative to gross investment. The rate of net investment is shown as increasing by 2.3 per cent per year.

A comparison of the 1959-1965 indexes of the rate of investment with those of earlier periods can yield only approximate results because of the absence of a net investment series. With regard to the rate of gross investment, the data are unambiguous. If we ignore capital repairs, the rates of growth of gross investment calculated in Table 13 are far higher than any of the rates of growth of output in the 1950's calculated by Bergson, Bornstein, and Kaplan, and they are even higher than the rates of growth of national income,[1] according to official claim, as the following tabulation shows:[2]

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[1] The comparison with official Soviet national income is questionable: it would be more appropriate to use a gross rather than net output denominator in calculating the rate of gross investment. Unfortunately, the Soviet gross product measure, aggregate social product, includes not only depreciation but also intermediate transactions, hence is highly sensitive to change in industrial organization. The rates of growth of aggregate social product were slightly lower in each of the subperiods under discussion than those of the official Soviet national income series -- 10.8 and 9.7 per cent in 1950-1955 and 1955-1958, respectively, 10.4 per cent for the eight years as a whole (N. kh. 1960, p. 102).

[2] See above, pp. 43, 45 and below, p. 100. Investment from Table 13.

	Rates of growth, per cent	
	1951-1955	1956-1958
GNP by use, at		
Prevailing prices	8.2	..
Factor costs	7.6	..
GNP by origin at factor cost		
Bergson	7.3	7.0
Bornstein	6.5	7.4
Kaplan	..	6.9-7.4
Soviet concept national income		
Bergson	9.0	..
Official Soviet	11.4	10.2
Gross investment excluding capital repairs		
Gross of increments of unfinished construction	12.5	14.6
Net of increments of unfinished construction	..	16.4

Unless capital consumption allowances more than kept pace with the growth of gross investment, the foregoing data imply that the rate of net investment was increasing rapidly in 1950-1958 as well.[1] Some notion of differential changes in the rate of investment is also implied by changes in the average capital-output ratio, and further consideration may be deferred until after the discussion in the following section.

Capital-output Ratios

For a comparison of changes in capital-output ratios, the capital stock data are unsatisfactory in two respects: as indicated earlier, the rate of growth in the last two or three pre-Plan Years is somewhat

[1] Forthcoming studies of the Soviet capital stock by Norman Kaplan, and by Richard Moorsteen jointly with Raymond P. Powell should throw considerable light on the growth patterns of investment and capital in the 1950's.

clouded, but in addition, the observations are provided for inconvenient dates -- January 1, 1951, 1956, and 1960, while for the purpose of computing capital-output ratios we should prefer to have observations on January 1, 1950, 1955, and 1958. On assumptions discussed previously, we may move the January 1, 1960 capital stock value back two years by subtracting net investment in 1959, 225 billion rubles, and in 1958, 205 billion rubles,[1] yielding a January 1, 1958, capital stock of 2,535 billion rubles. However, we cannot do the same for the published 1951 and 1956 values.

Since Bergson presents annual data for real GNP in 1950-1955 we can obtain the rate of growth for the last four years of that period. At prevailing prices, the rate is 7.7 per cent at 1937 prices and 7.8 per cent at 1950 prices; it is 7.2 per cent at 1937 ruble factor cost.[2] It is probably safe to assume that these rates would be unchanged if the interval were extended to include 1956.[3] In this interval, the capital stock, according to the post-revaluation index,[4] grows at about the same rate as GNP, slightly faster if the comparison is with GNP at factor cost, considerably slower when compared with Soviet-concept national income, the officially claimed rate of growth for which is 11.2 per cent, slower even than the rate of increase of the same aggregate computed by Bergson, 8.4 per cent in the four years 1951-1955.[5]

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[1] N. kh. 1960, p. 154, and Table G.

[2] Real SNIP, pp. 301-303.

[3] Comparing Nancy Nimitz's estimate of GNP at current, prevailing prices in 1956 (SNIP 1956-1958, Table 2) with the corresponding figure for 1955 (Real SNIP, p. 300), the rate of increase is 8.4 per cent in current prices. Since there were agricultural as well as some other price increases in 1956, the growth rate in constant prices would have been somewhat smaller.

[4] See above, p. 65.

[5] Real SNIP, p. 180.

On the basis of the estimated value for January 1, 1958, the rate of growth of the capital stock in the span beginning January 1, 1951 is 8.3 per cent. This rate of increase appears to be greater than any of those computed or implied for GNP and NNP. It is substantially lower than the rate of growth officially claimed for Soviet-concept national income, 10.7 per cent. One suspects that the gap would be narrowed if Bergson's calculations of national income, Soviet-concept, were extended to 1958.

For the Seven Year Plan period, the estimated rate of growth of output are also below that of the capital stock. The latter can be computed as the rate of increase implied by the estimated January 1, 1958 value plus net investment in 1958, 1959 through 1965, less net investment in 1965. The implied rate of growth is 8.4 per cent. The rate of growth of output for both indicators in Table 14 is 7.4 per cent.

The evidence presented suggests -- and, clearly, does no more -- that with regard to capital-output ratios the Seven Year Plan period represents continuity with the preceding two or three years, in which a break with the first half of the 1950's may have occurred. Depending on what measure of output is used, capital-output ratios were either roughly stable or declining moderately in 1951-1956; over the seven-year interval 1951-1958, one observes an increase when the comparison is based on GNP, a moderate drop or near stability when the denominator is Soviet-concept national income, implying a reversal in the last few years before the start of the Seven Year Plan. This reversal, an increase in capital-output ratios, is unambiguous in 1959-1965.[1] Unfortunately, the data are inadequate to support more precise statements of rates of change in capital output ratios.

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[1] On the assumption that net investment may be considered equivalent to the difference between stock values at estimated prices gross of depreciation.

SUMMARY: INVESTMENT, CAPITAL, AND OUTPUT, 1950-1965

The factor of proportionality connecting the rate of investment and the capital-output ratio is the rate of growth of the capital stock, or the rate of capital formation, discussed in a previous section of this chapter. With qualifications already noted at a number of points, it would appear that in the first half of the 1950's a rapidly growing rate of investment supported a high rate of capital formation with little change in the capital-output ratio. Since the planned rate of capital formation in the Seven Year Plan period is higher than in 1951-1956, and the capital-output ratio is rising, it is doubtful that the rate of investment in the period 1959-1965 is growing much faster than in the first part of the 1950's; the pace of increase in the rate of net investment is probably about the same in the two periods.

The pattern of change in the few years between these two periods is not entirely clear, partly because the deficiencies of our data make it difficult to define the boundaries of the time intervals. The rate of capital formation in this middle period was probably higher than either before or after, while a (probably) rising capital-output ratio, a trend maintained in 1959-1965, contrasts with stability of the ratio in the first half of the 1950's. The implication is that the rate of investment has been increasing at a pace probably greater than in either of the bracketing time spans.

IV. INCOME AND PRODUCT, SOVIET DEFINITION

The bulk of this study is devoted to the presentation of data in a national income framework associated with the name of Professor Bergson. This chapter considers the relations between the SNIP framework and that of Soviet social accounting. The interest is in learning more about the Soviet measures (for which the volume of published data has recently been increasing) and in testing the reliability of the SNIP estimates by direct comparison with, and by assessing the consistency of, the Soviet measures. As indicated in the Introduction, the consistency evaluation also has intrinsic interest.

The major focus of this chapter is on national income, Soviet-definition.[1] By origin, it is the net product of what are considered "productive" activities, or the incomes ("primary incomes") generated therein; by use, it is the sum of "nonproductive consumption" and "accumulation." Only brief consideration will be given to the other global measure of Soviet national accounting, aggregate social product (sovokupnyi obshchestvennyi produkt). Aggregate social product (ASP) is a gross measure that adds to national income not only depreciation, but also intermediate transactions. Since not all intermediate transactions are included, intraplant turnover being excluded, ASP is extremely sensitive to changes in industrial organization. The first published indexes of ASP appeared only in 1961.[2]

The discussion begins with a consideration of income and output by origin. An attempt at reconciliation of total GNP and national

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[1] Hereafter, the qualifier "Soviet-definition" will not be repeated after the term "national income," which should be understood as referring only to the measure in the Soviet definition.

The literature on Soviet national accounting is extensive and only a few works can be mentioned here: Bor, op. cit., Sitarian, Natsional'nyi dokhod soiuznykh respublik; Sobol', op. cit.; Morozova, op. cit.; B. P. Plyshevskii, Raspredelenie natsional'nogo dokhoda v SSR, Moscow: Sotsekgiz, 1960; A. G. Zverev, Natsional'nyi dokhod i finansy SSSR, Moscow: Gosfinizdat, 1961.

[2] N. kh. 1960, p. 102.

income in the next section leads to a more detailed analysis of national income, by incomes generated and by final use, in relation to SNIP counterparts. The chapter concludes with a brief comparative evaluation of the rate of growth of national income. An addendum to the Chapter is devoted to a special case of the issue considered in the first section, the consistency of output and income measures.

NATIONAL INCOME AND AGGREGATE SOCIAL PRODUCT BY ORIGIN

The published Control Figures do not include any information on national product by branch of origin, other than goals for increases in the value of gross industrial and agricultural output. Indeed, the first official breakdown of national income and aggregate social product (data for 1959) since the middle 1930's[1] was published only in 1960.[2] Turetskii has provided a table showing the percentage distribution of national income and ASP by branch in 1958, 1959, and 1965.[3] His 1959 shares are identical with the official data in the 1959 handbook, and his 1965 shares are said to be based on the "initial draft (proekt) of the approved Control Figures of the Seven Year Plan."[4] His data are reproduced in Table 15 along with the increases in branch output implied by his data, given increases of 65 per cent in national income and 75 per cent, according to Turetskii, in ASP.[5]

The implied increases in gross industrial and agricultural output are, allowing for rounding errors, clearly those given in the Control

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[1] Some unofficial but apparently authoritative data were provided for 1955 in the form of shares in national income of industry, agriculture and construction. A. Strukov, "Planirovanie natsional'nogo dokhoda v SSSR," Planovoe khoziaistvo, 1957, No. 8, p. 76.

[2] N. kh. 1959, p. 78.

[3] Turetskii, Planirovanie i problemy balansa narodnogo khoziaistvo, p. 123.

[4] Ibid., p. 122.

[5] Ibid., p. 132 and the same author's article, "Rezervy ekonomii, sostav zatrat i khozraschet," in Turetskii (ed.), Rezervy ekonomii v narodnom khoziastve SSSR, Moscow: Gosplanizdat, 1960, p. 12.

Table 15

STRUCTURE OF AGGREGATE SOCIAL PRODUCT (ASP) AND NATIONAL INCOME BY BRANCH, 1958 AND 1965
(per cent)

	Per cent shares in ASP		Per cent shares in National income		Per cent increases 1965 vs 1958	
	1958	1965	1958	1965	Gross	Net
Industry	60.0	61.3	51.4	52.6	79	69
Agriculture	19.0	18.2	22.5	22.0	68	61
Transport and communication	4.0	4.0	4.7	4.7	75	65
Construction	10.1	10.3	9.8	10.1	78	70
Other	6.9	6.2	11.6	10.6	58	51
All branches	100.0	100.0	100.0	100.0	75	65

Sources:

Shares from Sh. Ia. Turetskii, Planirovanie i problemy balansa narodnogo khoziaistva, Moscow: Ekonomizdat, 1961, p. 123. Per cent increase in ASP from Turetskii, p. 132; national income from Control Figures. Increases in output of separate branches are those implied by the branch shares and increases in total gross and net output.

Figures. The increase in transport and communication is in line with data supplied by Turetskii which imply a 67 per cent planned increase in the value of freight transport alone, excluding air freight transport, using 1958 shipment costs to weight the ton-kilometer figures for the different transportation modes.[1] The implied increase in the gross output of construction seems exaggerated when compared with an estimate of planned growth of construction-installation outlays cited in Appendix Table C-2, and somewhat high even in relation to other more recent data.[2]

The curious feature of Table 15 is the gap between rates of growth of gross and net output. What accounts for the more rapid growth of gross output? A comparison for prior years is possible only for the change between 1953 and 1960 in industrial, agricultural, and total output, net and gross. The results are: identical output changes in industry, a greater growth of gross than net in agriculture, and a somewhat slower growth of gross than net for total product.[3] In the addendum to this chapter a discussion of the consistency of output and income increases for collective farms suggests a basis for a greater growth of gross than net output in 1959-1965, and the conclusion may well hold for agriculture as a whole. On the face of it, there is nothing in the industrial targets of the Control Figures that precludes a more rapid rate of increase of intermediate than final goods. Indeed,

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[1] Turetskii, Planirovanie i problemy balansa narodnogo khoziaistva, p. 136.

[2] The Seven Year Plan rate of growth of construction-installation (state and cooperative sector only?) is said to be 8 per cent per year, according to "S'ezd stroitelei kommunizma," Ekonomika stroitel'stva, 1961, No. 11, p. 7 and "Stroitel'stvo mezhdu XX-XXII s"ezdami KPSS," Ekonomika stroitel'stva, 1961, No. 9, p. 9. The possibility cannot be ruled out that these are references to a revised Seven Year Plan target.

[3] Gross agricultural and industrial output and ASP indexes from N. kh. 1960, pp. 102, 223; net output indexes, ibid., p. 153. With 1953 = 100, the 1960 indexes are:

	Industry	Agriculture	Total product
Gross	207	157	191
Net	207	148	196

the campaign for greater specialization and subcontracting[1] suggests that the conclusion can be phrased positively, rather than negatively, and applies to branches other than industry.[2]

Other Soviet sources provide information at variance with Turetskii's picture of changes in the structure of national income by origin. All references agree on the planned increase in the share of industry but not on the change in relative weight of other sectors. For example, according to one writer, the share of agriculture is expected to remain the same.[3] On the contrary, it is stated in another article: the increase in the ratio of net to gross output in agriculture is to be faster than in any other branch of the economy.[4] Turetskii's data has the combined share of agriculture, industry, and construction in national income rise by one percentage point, from 83.7 to 84.7 per cent; by other accounts, the increase is from 86 to 90 per cent.[5]

On balance, the evidence seems too thin to support a firm commitment either to the structural patterns shown in Table 15 or to a conclusion of consistency among all branch gross and net output goals. Indeed, net output targets appear to be a matter of controversy in the literature, apparently, because official data have not been released.

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[1] See point 12 of the section "Development of Socialist Industry" in the approved Control Figures.

[2] Because of the method of calculating gross output, specialization by finished product may have no effect on the output index; specialization by process (subcontracting) will, other things equal, raise the ratio of gross to net product.

[3] G. Perov, "Sotsialisticheskoe vosproizvodstvo v period osushchestvleniia semiletnego plana," Planovoe khoziaistvo, 1959, No. 3, p. 7.

[4] N. Lagutin, V. Skuratov, "Natsional'nyi dokhod SSSR i ego ispol'zovanie v semiletnem plane," Voprosy ekonomiki, 1959, No. 2, p. 19.

[5] S. Sitarian, "Natsional'nyi dokhod i biudzhet v gody semiletki," Finansy SSSR, 1959, No. 9, p. 9 and Perov, op. cit., p. 6.

GNP AND NATIONAL INCOME

Reconciliation of Total GNP and National Income

Table 16 traces an attempted reconciliation of national income with GNP, as estimated in the basic accounts of this study. The procedure may be summarized as follows: The GNP values of Tables E and F are adjusted upwards for a decline in retail prices and for underestimation of investment -- collective farm inventories, labor contributions in kind and public sector livestock investment. The revised GNP values are then reduced by the value of (i) the component of outlays on services that, it is believed, is regarded in Soviet accounting as nonmaterial and, hence, not partaking in the creation of national income, and (ii) depreciation and other capital consumption allowances for productive capital. Depreciation on nonproductive capital is considered to be not intermediate product but an element of consumption and, therefore, is not to be deducted. The deduction of military pay and subsistence is of the entry in the GNP public sector outlay account, where it serves as a measure of military personnel services. Military subsistence as a household consumption outlay is not deducted, since Soviet accounting also includes it with consumption.

After these adjustments are completed, values of national income are obtained that differ from the actual values (as estimated) by 2.6 per cent in 1958 and 4.4 per cent in 1965 of the lower, theoretical value. The relative difference is, of course, smaller if the percentages are computed with reference to the higher, actual values. If we assume accuracy in the GNP estimates, then item D in Table 16 underestimates national income because of excessive deductions for services and intermediate product. Assuming accuracy of the deductions in Table 16, GNP, with omitted investment restored, has been underestimated: the absolute margins are unchanged, but the relative errors are reduced to 1.9 per cent in 1958 and 3.3 per cent in 1965.

Table 16

RECONCILIATION OF GROSS NATIONAL PRODUCT AND NATIONAL INCOME, AT 1958 PRICES, 1958 AND 1965

(billion rubles)

		1958	1965
A.	Gross national product	1537.1	2533.2
B.	Add: omitted gross investment		
	1. Collective farm investment	16.5	18.2
	2. Private housing construction	19.3	25.7
	3. Livestock investment	10.2	12.4
	4. Total	46.0	56.3
C.	Subtract: services and capital consumption		
	1. Nonmaterial components of services		
	a. Housing, including imputed rent	12.7	18.2
	b. Trade union and other dues	6.4	9.0
	c. Other services	36.0	72.0
	d. Communal services	78.8	150.2
	e. Military pay and subsistence	41.4	39.0
	f. Administration, internal security, other defense (budget) science, etc.	60.4	129.9
	g. Total	235.7	418.3
	2. Capital consumption	145.2	226.9
	3. Total	380.9	645.2
D.	Equals theoretical national income, net of losses	1202.2	1944.3
E.	Actual national income, net of losses	1233.0	2030.0
F.	Difference between actual and theoretical income, as per cent of theoretical	2.6	4.4

Sources:

A. GNP. From Table E except that the 1965 figure has been augmented by 50 billion rubles, representing the difference between 1965 retail sales at 1958 and at 1965 prices (N. kh. 1958, p. 103).

B. Omitted gross investment.

1. Collective farms. Represents the sum of omitted inventory and fixed capital investment in kind. Total additions to collective farm inventories in 1958 are estimated (below, p. 102) as 10-20 billion rubles, here averaged to 15 billion. Of this sum, 4.0 billions are accounted for in GNP (see Appendix D, item 3.B), leaving 11 billions as the omission. For 1965, omitted additions to inventories are arbitrarily assumed to be two-thirds of those accounted for (9.0 billion), or 6.0 billion rubles. Omitted fixed capital investment in 1958 and 1965 is the difference between the sum of items 1.B.(1) and 2.B in Table G and collective farm investment in Appendix D, item 3.A, and represents the value of the investment contribution of labor in kind.

Table 16 (continued)

2. Private housing. The GNP accounts include only the value of building materials purchased and construction labor hired by households, omitting the value of building services contributed by the prospective owners themselves. For simplicity, it is assumed here that the latter may be crudely estimated as the difference between the total gross value of private housing construction (Table G, 1.C and 2.C) and the sum of household outlays on building materials and services (Table B, items 5.A and 5.B), 13.2 billion in 1958 and 17.3 billion rubles in 1965.

3. Livestock. Calculated as the difference between the total value shown in Appendix Table E-1 and private agricultural investment in kind, item 5.C of Table B.

C. Services and capital consumption. The following entries should cover outlays included in GNP but omitted from national income, Soviet definition.

1. Nonmaterial component of services

a. Housing. A portion of household rental payments may be considered as the counterpart of the material component of current maintenance of housing. The value of this material component is estimated as 1.3 billion rubles in 1958 and 2.0 billion rubles in 1965. The remainder of current household outlays on housing, actual or imputed (Table B, item 2.A), is the deduction entered in this table.

The estimates of the material component of current maintenance were obtained as follows: The value of state outlays on administration, upkeep and current repair were 6.1 billion rubles in 1957 (D. L. Broner, Sovremennye problemy zhilishchnogo khoziaistva, Moscow: "Vysshaia shkola," 1961, p. 181, Table 53), and are here estimated as 6.5 billions in 1958. Judging from a distribution of administrative expenses, which account for perhaps half the total (ibid., pp. 181, Table 53, and 195-196) labor payments account for the preponderant share of maintenance outlays. Material outlays are, therefore, assumed to be 20 per cent of the total or 1.3 billion rubles in 1958. Material outlays are assumed to increase roughly in proportion to the increase in the stock, 50 per cent (see Appendix B, item 2.A), or to 2.0 billion rubles. Maintenance of private housing is ignored as negligible.

b. Trade union and other dues. Seventy-five per cent of the entries in Table B, item 2.B, is deducted here. The remainder is an arbitrary allowance for material outlays of the organizations concerned.

c. Other services. The major components of this category that are likely to be included in national income, Soviet definition, are found among services provided by the socialist sector, which include: utilities; transportation and communication; entertainment; rest homes and children's services; baths, laundries, barber shops (SNIP 1956-1958, Appendix Table B-1, note b). In addition, services included in Soviet retail trade statistics have been separated out in the SNIP accounts and entered in this category.

Table 16 (continued)

The estimate of services to be deducted for 1958 is obtained as follows: The distribution of "other services" between those provided by the socialized and those provided by the private sectors in 1958 is 61.6 and 7.6 billion rubles, respectively (SNIP 1956-1958, Notes to Table 1, Part B, item B.2.d). From "other services" provided by the socialized sector, 16.7 billion rubles are subtracted for utilities (Table 18, item A.1.d) and 3.1 billion rubles for services included in retail trade (SNIP 1956-1958, Notes to Table 1, Part B, item B.1.a). Of the remaining 41.8 billion rubles, 70 per cent (see the discussion of the share of material outlays in communal services in sources to Table 18, item A.2.a), or 27.9 billion rubles, are considered to be wage payments. Services provided by the private sector are considered to be pure wage outlays. Rounded, the 1958 value of "other services" entered for deduction is 36 billion rubles.

Since the distribution of "other services" in 1965 between socialized and private sector services is not known, the 1965 estimate is obtained by subtracting outlays on utilities, 28.0 billion rubles (Table 18, item A.1.d) and services included in retail trade, 6.0 billion (see Appendix B, item 1.A), from total "other services," 129.9 billion rubles (Table B, item 2.C), considering three-quarters of the remainder to consist of labor payments. Therefore, the 1965 value of "other services" entered for deduction is 72 billion rubles.

d. Communal services. Total communal services from Table D, item 1.D, less material outlays from Table 18, items A.1.c and A.2.a.

e. Military pay and subsistence. Table D, item 5. In the SNIP accounts, military subsistence as an outlay appears twice, once as a household outlay in kind and once as a public sector outlay. In the Soviet theory of national income accounting, military subsistence is included in household consumption, but as a measure of the services of the armed forces, subsistence along with pay is excluded from public sector outlays.

f. Administration, etc. The sum of these outlays has been estimated as 111.8 billion rubles for 1958 and 249.1 billion for 1965 (Table D, items 2, 4, 6.D). The share of labor payments is assumed to be two-thirds for administration and internal security and 50 per cent for the residual category of science, other defense (budget), etc.

2. Capital consumption: Excludes depreciation on nonproductive capital which Soviet national accounting treats as an element of consumption. Depreciation on nonproductive capital is estimated as the sum of depreciation on housing and on other nonproductive capital (Table 18, items A.1.e and A.2.b) -- 9.9 billion rubles in 1958 and 16.6 billion rubles in 1965. Total capital consumption allowances are taken from Table G and consist of the sum of items 3.D, 4, and 5. The totals are 155.1 billion rubles in 1958 and 243.5 billion in 1965.

E. Actual national income: Table 18, item C.

Here, too, percentages are computed on the base of the lower of the two figures in each pair to be reconciled -- in this case, adjusted GNP.

Under either assumption, the absolute and percentage error in 1965 is greater than in 1958. Since the quality of the data for 1958 clearly is superior to that of the data for 1965, such an outcome appears not surprising. However, the corollary conclusion that the rate of growth of GNP has been underestimated, that GNP in 1965 has been understated to a degree greater than GNP in 1958, suggests the need for a re-examination of the margins of error. Is 1965 GNP more substantially understated, perhaps as a result of an incorrect guess at the four-digit original of the 1965 budget figure chosen?[1] Or, in view of the impressionistic nature of some of the estimates underlying the deductions in Table 16, is the shortfall more likely attributable to overstatement of deductions, or perhaps to a combination of both?

All this, of course, assumes the accuracy of the national income values. If they are overestimated in Table 16, the margin of error is correspondingly reduced. Since the national income values for 1958 and 1965 are not given explicitly in Soviet sources but are derived from absolute values in 1959 along with stated per cent changes in 1958-1959 and 1958-1965, there is at least the possibility of rounding errors.

Answers to these questions require a more careful examination of the components of national income. The next section discusses incomes generated and the following section discusses final use.

Primary Incomes

In a work published in the summer of 1959, the then Minister of Finance, Zverev, declared that the volume of "money accumulation" in the form of profits, turnover taxes, social insurance funds, deductions

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[1] See above, p. 14-15.

from collective farm money incomes for indivisible funds, and other revenues was planned to reach 1200-1250 billion rubles in 1965.[1] Zverev defined the term "money accumulation" somewhat more carefully in an earlier work as a form of the "net income of society, representing part of the national income" and consisting of "profits, turnover tax, social insurance premia in productive branches, customs revenues, revenues of credit institutions, local taxes on enterprises and organizations, collective farm payments into indivisible funds, etc."[2]

The concept "net income of society" in Soviet accounting is reasonably straightforward and denotes the net product created in the sphere of material production less payments to labor employed in the productive sphere. There should then be a definable relation between "money accumulation" and the nonhousehold charges against current product of the SNIP accounts which may serve as a basis for testing the reliability of the SNIP 1965 estimates. "Money accumulation" would appear to be substantially identical with "consolidated total charges against current product, net of depreciation"[3] on the income side of the SNIP public sector account. If that is the case, public sector incomes and, consequently, public sector outlays and GNP in 1965 have been underestimated by 50-100 billion rubles.[4] However, examination of the available data suggests that such a conclusion is not justified on the evidence. The information to be considered is of two kinds -- first, total "money accumulation" and major components up to 1958, and second, major elements of "money accumulation" in 1965.

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[1] A. G. Zverev, Khoziaistvennoe razvitie i finansy v semiletke (1959-1965 gg.), Moscow: Gosfinizdat, 1959, pp. 20, 49.

[2] Zverev, Voprosy natsional'nogo dokhoda i finansov SSSR, Moscow: Gosfinizdat, 1958, p. 111.

[3] Zverev makes no mention of depreciation on nonproductive capital, although the charge is included on the outlay side in consumption. (See Table 18 below.)

[4] Less the value of depreciation on nonproductive capital.

Values of money accumulation and its major components for scattered years in the period since 1950 have appeared in a number of Zverev's written works. They are presented in Table 17. Unfortunately, doubts of the reliability of the data are aroused by examples of widely divergent values for a given year (total money accumulation in 1958 plan) and apparently inconsistent changes between years (other revenues between 1950-1955, 1957 plans, and 1958 plan).

The 1958 plan (b) figures date from a December 1957 article, while those of 1958 plan (a) appear in a book sent to the printers in the spring of 1958. In the latter work, which also gives figures for 1955 and 1940 (b), a footnote indicates that previously published data were adjusted to exclude "MTS operating outlays, losses of some productive enterprises, losses in housing and communal services, payments through (po linii) the Ministry of Foreign Trade[1] and others." Since the figures for 1940 (a), 1950, 1956, and 1957 plans derive from 1957 sources, while the others date from later references, it is possible that the adjustments described provide part of the explanation for some of the curiosa in Table 17. However, the bearing of these adjustments is largely on profits and cannot account for all the anomalies: the difference between 1940 (b) and 1940 (a) figures, the decline in "other revenues" between 1950 and 1955 followed by a sharp jump in 1956, a moderate increase in 1957 plan, and a 1958 plan decline from the 1957 plan level.

Moreover, the profits data for 1940, 1950, and 1955 are identical to those given in the 1959 and 1960 handbooks.[2] (The 1956 figure in Table 17 differs slightly from that given in the handbook, but this is probably because of revision of the earlier figure on the basis of later, more complete returns.) The profits figures in the handbooks

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[1] Although no explanation of this enigmatic phrase is offered, the reference is probably to subsidies covering losses from exports, arising from the difference between the official ruble exchange rate and the true ratio of domestic-ruble to world market prices.

[2] N. kh. 1959, p. 799, and N. kh. 1960, p. 843.

Table 17

"MONEY ACCUMULATION," SELECTED YEARS, 1940-1959 PLAN
(Billion rubles)

	State-cooperative profits	Turnover Taxes	Other revenues	Total "money accumulation"
1940 (a)	32.7	105.9	18.6	157.2
1940 (b)	32.7	105.9	14.5	153.1
1950	52.2	236.1	54.5	342.8
1955	125.8	242.4	43.7	411.9
1956	136.3	258.6	105.6	500.5
1957 Plan	171.6	277.3	117.0	565.9
1958 Plan (a)	192.0	301.5	92.6	586.1
1958 Plan (b)	*	*	*	625.5
1959 Plan	223.9	333.0	105.3	662.2

Note:

* Means not given.

Sources:

1940 (a), 1950, 1956, 1957 plan. A. G. Zverev, "Finansy SSSR za 40 let sovetskoi vlasti," Finansy i sotsialisticheskoe stroitel'stvo, Moscow: Gosfinizdat 1957, p. 54.

1940 (b), 1955 and 1958 plan (a). Zverev, Voprosy natsional'nogo dokhoda i finansov SSSR, p. 112.

Total money accumulation in 1957 plan and 1958 plan (b). Zverev, "Gosudarstvennyi biudzhet na 1958 god," Planovoe khoziaistvo, 1957, No. 12, p. 14.

1955, 1958 plan (a) and 1959 plan. Zverev, Khoziaistvennoe razvitie i finansy v semiletke, p. 48.

are described as "net of losses," and Nancy Nimitz has found that for this series, the so-called "balance profits," the concept of profits embraces not only sales of output but a variety of other types of income and losses: for example, housing, tax refunds or additional tax charages, fines and forfeits, capital gains and losses on inventories due to price changes.[1] In addition, the handbook data are identified as the net profits of productive and nonproductive enterprises and organizations alike. This raises at least two questions: (i) If the 1940 (a) "other revenues" were revised subsequently to exclude losses, why did the adjustment not affect 1940 profits? Similarly, why are 1950 and 1956 profits in Table 17 identical to the handbook data? (ii) If "money accumulation" is a form of the "net income of society, representing part of the national income," presumably incomes of nonproductive organizations should be excluded. In that case, again, what explains the identity of profits in Table 17 and the global profits data in the handbooks?

Without additional information (not presently available) it is difficult to obtain from Table 17 a clear notion of the scope and magnitude of "money accumulation."

Discussing the 1965 goal of 1200-1250 billion rubles, Zverev declares: "The vast growth of money accumulation in the current seven year period is the result of the planned increase in production and in the reduction of its cost. Especially rapid is the increase of profits in the economy. In these conditions, the possibility cannot be excluded that by the end of the Seven Year Plan, money accumulation in the form of profits, on the basis of existing relations, will exceed accumulation in the form of turnover tax proceeds."[2]

Although the sense of this remark is not self-evident -- among others, the significance of the phrase "on the basis of existing relations" is not clear -- Zverev is assumed to be implying here approximate equality of the 1965 goals for profits and turnover

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[1] SNIP 1956-1958, pp. 74-75.

[2] Zverev, Khoziaistvennoe razvitie i finansy v semiletke, p. 49

taxes. The maximum value of turnover tax proceeds in 1965 as estimated in Appendix Table C-3 is 470 billion rubles. The profits target Zverev had in mind was presumably of the net "balance" type (Type II profits, to use Nancy Nimitz's term), employed by the statistical handbooks and by Zverev in the same source for 1958 and 1959 plan data. However, according to the present Minister of Finance, Garbuzov, profits (Type II) in 1965 are to "exceed" 500 billion rubles.[1] If the estimate of turnover taxes is correct, Garbuzov's statement contradicts the presumed meaning of Zverev's remark. Suppose, however, that the figure cited by Garbuzov is a revised, not an original, target. If the original target was greater, the contradiction is underscored; if it was smaller than the figure Garbuzov cited, the Zverev statement may be correct, provided the maximum estimate, rather than a lower value of turnover taxes, is the basis of comparison.

It should be noted again that total profits do not enter directly into the 1965 accounts at any point. Retained profits, a specific entry in Table C, are independently estimated, but profits taxes are subsumed within the lumped sum of all current enterprise contributions to the state budget. It is unfortunate that Zverev's "money accumulation" data inspire such doubts of their reliability as to provide little guidance on the value of that key magnitude, the state budget.

Components of Final Use

Table 18 presents an estimated distribution of national income by use at 1958 prices, in 1958 and 1965, following the major classification practice of the official income breakdowns for 1959 and 1960: the consumption fund, divided between household consumption and material outlays in nonproductive institutions, and the accumulation fund, consisting of net increases in fixed capital, inventories and state reserves. The official 1959-1960 income tabulations also distinguish within the category of material outlays in nonproductive

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[1] Ekonomicheskaia gazeta, April 23, 1962.

Table 18

NATIONAL INCOME BY USE, AT 1958 PRICES
1958 AND 1965

	1958		1965	
	Billion rubles	Per cent	Billion rubles	Per cent
A. Consumption fund				
1. Household consumption				
a. Retail purchases	651.4	52.8	1037.3	51.1
b. Consumption of income in kind, including military subsistence	126.2	10.2	152.9	7.5
c. Food consumed in educational and health institutions	9.5	0.8	19.0	0.9
d. Outlays on utilities	16.7	1.4	28.0	1.4
e. Depreciation on housing	6.5	0.5	9.8	0.5
f. Total	810.3	65.7	1247.0	61.4
2. Material outlays in non-productive organizations and institutions				
a. Education (excluding science), health and other communal services	20.5	1.7	41.0	2.0
b. Depreciation on non-productive capital other than housing	3.4	0.3	6.8	0.3
c. Other: housing, government administration, science, internal security, defense	65.8	5.3	175.2	8.6
d. Total	89.7	7.3	223.0	11.0
3. Total consumption fund	900.0	73.0	1470.0	72.4
B. Accumulation fund				
1. Net increase fixed capital	205.0	16.6	395.0	19.5
2. Residual: net increase of inventories and state reserves, of which:	128.0	10.4	165.0	8.1
a. Net inventory increase	(80.0)	6.5	(80.0)	3.9
b. Net increase state reserves	(48.0)	3.9	(85.0)	4.2
3. Total accumulation fund	333.0	27.0	560.0	27.6
C. National income	1233.0	100.0	2030.0	100.0

Table 18 (continued)

Sources:

A.1. Household consumption.

a. Retail purchases. Represents the sum of household purchases for consumption in state and cooperative retail trade (including services) and in collective farm markets. The 1958 figure is from SNIP 1956-1958: the sum of Table 1, Part B, items B.1.a (with services added back in--see the Notes to that table) and B.1.b. The figure for 1965 is the sum of items 1.A and 1.B of Table B, plus services (see Appendix B, item 1.A), plus 50 billion rubles, representing the difference between 1965 retail sales at 1958 and at 1965 prices (N. kh. 1958, p. 103).

b. Income in kind. Table B, item 3.D.

c. Food consumed in institutions. Classification with household consumption is stated in Sobol', op. cit., p. 160 and Petrov, op. cit., p. 389. The 1958 value was obtained as follows: In 1957 identified outlays by the state budget on food in education and health institutions were 7.3 billion rubles. However, there were sizable unidentified outlays in the distributions of the total expenditures of these institutions [Ministerstvo finansov SSSR, Biudzhetnoe upravlenie, Raskhody na sotsial'no-kul'turnye meropriiatiia po gosudarstvennomy biudzhetu SSSR, Moscow: Gosfinizdat, 1958 (hereafter abbreviated to Raskhody na sots. kul't.) pp. 46, 71]. On the assumption that the unidentified outlays represent total expenditures by institutions which are included in the identified grand totals, and if outlays on food were the same proportion of unidentified as of identified outlays, total expenditures on food in 1957 were 8.8 billion rubles. The 1958 estimate allows for an increase in 1958. The 1965 value is twice that of 1958, or roughly proportional to the increase in all current outlays on health and education (Table D, items 1.A and 1.B).

d. Outlays on utilities.

1958. According to Broner, op. cit., p. 208, household outlays on electricity, water (including general plumbing), gas and heating in state housing per unit of living space were 2.3 times the rental charged. Given an average annual rental of 15.84 rubles per square meter of living space (see Appendix B, item 2.A), this implies an annual utilities charge of 36.43 rubles per square meter. The stock of state housing in 1958 was 524 million square meters of floor space (N. kh. 1958, p. 641) of which 70 per cent (Broner, op.cit., pp. 91, 99), or 367 million square meters, was living space. Therefore, for state housing, total household outlays on utilities in 1958 were 13.36 billion rubles. [Broner's book was written and published before the publication of the results of the 1960 housing census in N. kh. 1960, p. 613, which showed the state housing stock at the end of 1958 as 500 million square meters, or 5 per cent lower, and the private housing stock as 29 per cent higher, than was indicated in N. kh. 1958. For this reason, it is necessary here to use the earlier rather than the later, corrected, data.]

In terms of square meters of floor space, urban state housing in 1958 accounted for roughly 40 per cent of the total national

Table 18 (continued)

housing stock: private urban housing was 332 million square meters according to N. kh. 1960, p. 613 and 257 million according to N. kh. 1958, p. 641, while private rural housing, according to Strumilin, was 430 million square meters (see Appendix B, item 2.A). However, private housing, on the average, is much inferior to state housing with respect to general plumbing, heating and lighting facilities: At the end of 1955, only 69.2 per cent of private urban housing space had electricity, as compared with 99 per cent of state housing space; the corresponding percentages for plumbing were about 1 per cent for private and roughly 50 per cent for state housing. Only an insignificant fraction of private housing had central heating (state, 33 per cent) or gas (state, 23 per cent). (Broner, op. cit., p. 115) In 1957 only 39 per cent of all collective farms had electricity, and it is likely that even on electrified farms electric service was provided for few households (Janet Chapman, Consumption Levels in the Soviet Union and the United States, The RAND Corporation, P-2173, November 18, 1960, Table 3, p. 65 and sources to item 9 of Table 3, p. 69). For these reasons, the computed value of outlays for state housing is raised by only 25 per cent to obtain the total value for all household outlays on utilities.

1965. According to Broner (op. cit., p. 116), there is to be some increase during the Seven Year Plan period in the share of new housing equipped with "conveniences" (blagoustroistva), from 75 per cent in 1959 to 85 per cent in 1965. Presumably, urban state housing is meant. This information does not appear to justify an estimate of the change in urban utilities outlays very much larger than the change in the housing stock. Although information on planned extension of utility service to rural households is lacking, the Control Figures call for completion "in the main" of the electrification of collective farms by the end of the Plan period and for supply of electricity from the state power network to collective and state farms. The national housing stock, urban and rural, is planned to increase by less than 50 per cent (see Appendix B, item 2.A). The 1965 estimate of utilities outlays represents a two-thirds increase over the 1958 level.

e. Depreciation on housing. Because of the paucity of information on how the CSA treats this category, the estimate here is necessarily partly guesswork. The estimate for 1958 is obtained as the product of a value at original cost of the total housing stock and a depreciation rate. Each of these elements is in the end a somewhat arbitrary estimate. The depreciation rate assumed is 1 per cent. The corresponding rates (for replacement only, excluding the amortization rates earmarked for capital repairs) in 1957 were 2.32 per cent in industry and 1.44 per cent in transportation and communication (A. Efimov, "Novye normy amortizatsii osnovnykh fondov," Voprosy ekonomiki, 1959, No. 9, p. 4). One per cent is also the rate estimated by N. Filatov "O normakh amortizatsii i zatratakh na remont zhilishchnogo fonda" in Nauchno-issledovatel'skii finansovyi institut, Planirovanie i finansirovanie kapital'nogo remonta osnovnykh fondov, Moscow: Gosfinizdat, 1958, p. 204.

Table 18 (continued)

Actual amortization allowances in the operation of state housing finance only about three-fifths of capital repairs and provide nothing toward capital replacement (Broner, op. cit., pp. 180-181). This situation apparently forces the CSA to estimate depreciation independently. Thus, S. Sitarian (Natsional'nyi dokhod soiuznykh respublik, p. 116) states that "depreciation on housing is determined on the basis of data on the value of the housing stock and amortization norms." According to Sobol' (op. cit., p. 172), for the purpose of calculating the fixed capital balance, "depreciation of capital of nonproductive organizations and also of the populations' housing stock is calculated by means of norms (normativno) in the CSA alone."

The value of the housing stock at original cost in 1958 is difficult to establish. At census prices, the value of the total housing stock on 1 January 1959 was 941.5 billion rubles, which was 32.7 per cent greater than the corresponding original cost value (N. kh. 1959, pp. 67, 73). The latter works out to 709.5 billion rubles. According to N. kh. 1960, p. 613, the urban housing stock (state and private) increased 7.7 per cent in 1959, in terms of square meters of floor space. Very roughly, the average 1958 value of the housing stock at original cost may be estimated as about 650 billion rubles. It should be noted, however, that this estimate may differ considerably from the value as estimated by the CSA in 1958-1959: as indicated, comparisons of housing stock data in physical units from N. kh. 1958 and N. kh. 1960 show that precensus and postcensus housing data differ substantially. Since for urban housing the net change is an upward revision of the earlier estimated stock in 1958, it is quite possible that 650 billion rubles is an overestimate of the value adopted by the CSA in 1958-1959. For lack of better data this estimate is adopted, and the value of depreciation in 1958 is, therefore, 6.5 billion rubles. The 1965 value is estimated as 50 per cent greater, roughly in proportion to the increase in total floor space (see Appendix B, item 2.A).

A.2. Material outlays in nonproductive institutions.

a. Education, health, etc. The 1958 and 1965 figures represent the difference between total material outlays and food consumed (item A.1.c of this table). Total material outlays were obtained as the rounded sums of one-quarter of the respective total current outlays on education excluding science, one-third of current outlays on health, and one-quarter of current outlays on other communal services. The indicated ratios are assumed to represent the share of material costs in total current outlays. The ratios for education and health were estimated from a breakdown of budget outlays by type of expenditure in Raskhody na sots. kul't., pp. 46, 71. The ratios were calculated on the basis of the total identified outlays in this breakdown, on the assumption that the omitted expenditures are the current and capital outlays of several organizational entities with a distribution comparable to the identified outlays. The indicated ratio for other communal services is arbitrary. For total current outlays see Table D, item 1.

Table 18 (continued)

b. Depreciation on nonproductive capital. For 1958 the estimate represents the application of an assumed depreciation rate of 1.5 per cent to an estimate of the value of such capital at original cost. This procedure is the same as that used to estimate depreciation on housing. For the most part, amortization allowances are not computed by nonproductive organizations. The rate or rates estimated by the CSA have not been published, and the assumed rate of 1.5 per cent is a guess based on the estimated rate for housing and those for capital in other branches. (See sources for item A.1.e. of this table.)

Nonproductive capital other than housing is taken to be coextensive with the two corresponding categories in the distribution of January 1, 1960 capital values-- municipal services (kommunal'noe khoziaistvo i bytovoe obsluzhivanie) and the residual category of health, education, science, art, etc. These categories were valued at 283.9 billion rubles at census prices. If the ratios of original cost to replacement cost for capital of this type subject to the revaluation are approximately valid for all capital in this category, the original cost value at the beginning of 1960 would have been roughly 240 billion rubles. The required 1958 value is arbitrarily set at 225 billion, and the value of depreciation is consequently 3.4 billion rubles. By 1965 nonproductive capital other than housing is assumed to increase by 100 per cent, depreciation allowances increasing proportionately. While the estimated increase is quite arbitrary, the margin of error on the increase is unlikely to be greater than plus or minus 50 per cent. Hence, the margin of error on the 1965 value would be within 25 per cent. Absolutely, the error would involve less than 2 billion rubles.

c. Other. Equals item A.3 less the sum of all other elements of the consumption fund.

A.3. Total consumption fund. The share of the consumption fund in total national income was 72.9 per cent in 1959 and 72.3 per cent in 1960 (N. kh. 1960, p. 154). I assume that the share in 1958 was roughly 73 per cent. For explanation of the 1965 figure see sources to item C, national income, below.

B.1. Net increase fixed capital. Table G, item 7.

B.2. Residual. Equals the difference between the total accumulation fund, item B.3, and net increase of fixed capital, item B.1.

a. Net inventory increase. Item 3.B of Table D plus omitted collective farm inventories (Table 16, sources for item B.1).

b. Net increase state reserves. Equals the difference between the total accumulation fund, item B.3 and the sum of items B.1 and B.2.a.

B.3. Total accumulation fund. For 1958 represents the difference between national income and total consumption fund, item A.3. For explanation of the 1965 figure see immediately below.

Table 18 (continued)

C. National income. National income in 1959 at 1959 prices was 1364 billion rubles, gross of losses (M. Eidel'man, "Mezhotraslevoi balans obshchestvennogo produkta i ego ekonomicheskoe soderzhanie," Voprosy ekonomiki, 1961, No. 10, p. 67). In 1958 prices, national income in 1959 was 8 per cent larger than in 1958, and it seems reasonably clear that national income gross of losses is the basis of this index (N. kh. 1960, pp. 152-153, 873). Assuming that the difference between 1959 and 1958 prices is small enough to be ignored for present purposes, national income in 1958 gross of losses was 1263 billion rubles. Losses in 1958 are estimated as 30 billion rubles, as compared with 31 billions in 1959 and 29 billions in 1960 (ibid., p. 154, which gives losses explicitly for 1960 and income net of losses for 1959). Therefore, national income net of losses in 1958 was 1233 billion rubles.

The Control Figures call for a 62-65 per cent increase in national income (which is linked in the statistical handbooks to the official index and therefore can be considered as bearing on income gross of losses) and a 60-63 per cent increase in the consumption fund. Numerous Soviet sources indicate that the accumulation fund was planned to increase by 68 per cent. Using the maximum increases of the ranges indicated, 1965 levels of the consumption fund would be 1467 billion rubles, 559 billion rubles for the accumulation fund, and 2084 billion rubles for income gross of losses. These data in turn imply income net of losses of 2026 billion rubles and losses of 58 billion rubles. The implied increase in losses looks high, but this is very likely due to minor errors in the major elements of the calculation. After some rounding, the final estimates adopted are: consumption fund, 1470 billion rubles; accumulation fund, 560 billion; income net of losses, 2030 billion; and income gross of losses, 2080 billion.

institutions between outlays in institutions serving households and expenditures of scientific institutions and administration. The latter category undoubtedly embraces some military outlays.[1] No attempt is made to duplicate this classification in Table 18, for lack of data. In the official income distributions, the net additions to fixed capital are also broken down by productive and nonproductive capital. That distinction is also ignored in Table 18, for lack of both data and interest.

The structure of national income in 1958 may be compared with official national income data for 1959 and 1960 (Table 19). It should be recalled that the shares of the total consumption and accumulation funds in 1958 were assumed when Table 18 was computed, household consumption and the net increases in fixed capital are independent estimates, while all institutional outlays in the consumption fund and the net increase in inventories and state reserves in the accumulation fund are residuals obtained by subtracting independently estimated components from the total value of the corresponding fund. Of the shares of the independently estimated components in 1958, that of the capital stock increment does not appear out of keeping with the movement in the next two years, but this is not true of the share of household consumption. In view of our general notion of consumption conditions in 1958 and trends thereafter, the share of household consumption in 1958, when compared with 1959-1960 shares, appears too low. If the assumed 1958 share of the total consumption fund is accepted, the relative weight of institutional consumption in 1958 appears too high. Judging from the 1959-1960 data, the relative weight of this element in the consumption fund may have been overestimated in 1958 by perhaps 1/2 to 1 percentage points. If, again, the assumed share of the total consumption fund can be accepted, the error involved is in the neighborhood of 6 to 12 billion rubles of overestimation of institutional consumption and underestimation of household consumption.

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[1] See, for example, V. U. Kuleshov, Sotsialisticheskoe vosproizvodstvo, Moscow: "Vysshaia shkola," 1961, p. 45; also Petrov, op. cit., pp. 389, 414.

Table 19

STRUCTURE OF NATIONAL INCOME BY USE,
AT CURRENT PRICES, 1958, 1959, AND 1960
(per cent)

	1958	1959	1960
A. Consumption fund			
1. Household consumption	65.7	66.0	65.2
2. Institutions serving households	7.3	5.1	5.1
3. Science and administration		1.8	1.9
4. Total	73.0[a]	72.9	72.3[a]
B. Accumulation fund			
1. Net increase fixed capital	16.6	16.9	18.3
2. Net increase of inventories and state reserves	10.4	10.2	9.4
3. Total	27.0	27.1	27.7
C. National income	100.0	100.0	100.0

Notes:

[a] Minor discrepancies between totals and sums of components due to rounding.

Sources:

1958: Table 18.

1959, 1960: Computed from absolute data in N. kh. 1960, p. 154.

There are two categories of household consumption that are not explicitly included with the corresponding entries in Table 18. If that table's classification is exhaustive for major categories, the omitted items are at least partly included in the residual for institutional consumption. The omissions are purchases of goods and material services though channels not represented in the entry "retail purchases," that is, from individual artisans and in the rural collective farm markets. The value of sales by individual artisans probably did not exceed 7 billion rubles and may have been considerably less.[1] The magnitude of rural collective farm trade is unknown, but estimates for the middle 1950's are on the order of 15-20 billion rubles,[2] of which some part represents sales to collective farms rather than to households. Together, these omissions seem to be of the approximate order of magnitude suggested by consideration of Table 19.[3]

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[1] Data from the 1959 census (N. kh. 1960, pp. 25-27) suggest that there were about 150,000 artisans outside of cooperatives at the beginning of that year. Average annual earnings are assumed to be no more than half the average wage of workers and employees in 1958, 9430 rubles (see Appendix A, item 2.A).

[2] SNIP 1949-1955, p. 47.

[3] This conclusion, of course, assumes that the classification of Table 18 is an accurate reproduction of that employed by the Central Statistical Administration. However, references in Soviet sources to that classification are brief and leave a number of questions unresolved. In particular, the distinction between those household outlays that are classified with household consumption and those included with institutional consumption is unclear. Outlays on utilities are regarded as household consumption, rental payments that finance housing maintenance apparently are not. At the same time, depreciation of the housing stock on which there is no direct household outlay, and indeed can be considered to be entirely subsidized (capital repairs alone substantially exceed depreciation allowances on state housing--Broner, op. cit., pp. 180-181), is an element of household consumption. Consumption of food in educational and health institutions, although not paid for by households, is included with household consumption, but other material elements of services by these institutions are not. Since the indications in Soviet sources are so meager, confidence in the accuracy of Table 18's classification scheme may be misplaced.

The calculations presented in Table 16 reveal that elements of the GNP account, recombined for the purpose of estimating national income in the Soviet definition, fall short of those values as estimated by approximately 30 billion rubles in 1958 and 85 billion rubles in 1965. There are two categories in Table 18 that would appear to be relevant to the location of the shortfall, the residual of the consumption fund (item A.2.c.) and the net increase of state reserves (item B.2.b.). What kinds of outlays are classified in these categories? Current material outlays in passenger transport, communications not serving production, municipal services (including housing), science and general administration are clearly the major elements of the consumption fund residual.[1] The uncertainties concern the location of military outlays and the category of additions to state reserves, on which Soviet sources are sparing of comment. In one of the rare Soviet references to the subject, M. Z. Bor has declared that the state reserves "combine, first, state material reserves of a long-term character,[2] second, reserves of means of defense of a special character, and third, current reserves of the Council of Ministers, used in the course of fulfillment of the annual plan for satisfaction of current needs as they arise."[3]

One may speculate that increments to and withdrawals from the third category of state reserves mentioned by Bor are frequent during the course of the year but probably result in small net changes for the year as a whole. It is likely that changes in the first two categories of reserves are the significant factors in the total net

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[1] In addition to sources already cited see M. Eidel'man, "Opyt sostavleniia otchetnogo mezhotraslevogo balansa proizvodstva i raspredelenie produktsii v narodnom khoziaistve SSSR," Vestnik statistiki, 1961, No. 7, especially p. 13 and the scheme of the input-output table inserted between pp. 28-29. On p. 18 Eidel'man indicates that national income entries in the input-output table were taken from the national balances.

[2] Including gold reserves? Possibly, also foreign exchange and net claims? (Iu. A. Belik, Gosudarstvennyi plan i balans narodnogo khoziaistva SSSR, Moscow: Gosplanizdat, 1960, p. 52; Plyshevskii, op. cit. p. 28.)

[3] Bor, op. cit., p. 311.

change recorded in national income. If military procurement of major weapons is an important element of additions to state reserves, as seems to be implied by Bor, then much of the shortfall in the reconciliation attempt of Table 16 may be due to overdeduction of military outlays. If all of the 1958 value of "other defense (budget)," item 6.A of Table D, is included in national income, the shortfall in Table 16 is reduced by almost four-fifths. Thus, the category of state reserves may be the important missing piece of the puzzle, serving to reduce both the apparent margin of error on the 1958 GNP estimate and uncertainty concerning the accuracy of the national income value and its major components.

What does this imply for the 1965 values? The estimates of the accumulation fund and its components for 1965 in Table 18 suggest an increase of almost four-fifths in additions to state reserves. If outlays on "other defense (budget)" increased in proportion and were included in full in national income, the 1965 shortfall in Table 16 would be reduced by about 45 billion rubles, or by half. It is likely that the Seven Year Plan calls for a high rate of increase of outlays on "science," and it is probably not an unreasonable speculation that contemporary R&D, especially in military applications, is increasingly less labor intensive.[1] The result could be a substantially larger share of outlays on science included in national income than is assumed for the reconciliation in Table 16 and, hence, a further reduction of the apparent margin of error. The remaining discrepancy would be attributable to some combination of underestimation of GNP, overestimation of nonmaterial deductions, and overestimation of national income.

These remarks on the scope and magnitude of the increments to state reserves also suggest an impelling argument for assuming the

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[1] An example that comes to mind is the increasing cost of test vehicles as an element of space research programs.

lowest possible 4-digit interpretation of the 2-digit 1965 budget figure adopted. The highest possible 4-digit figure implied a value of total public sector incomes -- and, by definition, of public sector outlays also -- 75 billion rubles higher than the accepted figure in Tables C and D. This, in turn, implied a 75 billion ruble increase in "total other outlays," item 6.D of Table D, to 292.1 billion rubles, compared with 84.8 billions in 1958. Where would this enormous increase be reflected in the national income breakdown? It has been supposed that "other outlays" in 1965 comprised not only military and science outlays but perhaps also a reserve fund. If so, surely the reserve fund would appear with accumulation and probably with additions to state reserves. If most of "other defense" also appears there, and even assuming a fantastic quintupling of outlays on "science," the estimated value of additions to state reserves is far too small to absorb the remainder.[1]

THE RATE OF GROWTH OF NATIONAL INCOME

The planned rate of growth of national income in 1959-1965 is 7.4 per cent per year, exactly the same as the estimated rate of growth of GNP (Table 7). The official Soviet national income index claims a rate of growth of 11.4 per cent per year in 1951-1955 and 10.2 per cent in 1956-1958. In addition to GNP, Bergson has also computed national income at prevailing prices and Soviet coverage. In 1951-1955 Bergson's index for this output aggregate increases at 9.0 per cent, faster than any of his GNP measures but slower than the official claimed rate of growth.[2] Since the official national income series has been published only in index form, it is difficult to judge the sources of divergence in rates of growth. While the official

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[1] Admittedly, the estimate of investment is not without its margin of error, and the foundations supporting the value of inventory investment are quite shaky. But the value of the total accumulation fund is probably not far from the mark, and the figure for inventory investment may well err in the direction of underestimation.

[2] Real SNIP, p. 180. Bergson has not estimated national income beyond 1955.

national income series in the 1950's may be biased,[1] it would not necessarily follow that the same stricture applies to the 1959-1965 index. For one thing, the problem of price weights, which complicates all previous comparisons, would not be a factor in the 1959-1965 comparison.

Because the reliability of the official national income series in the 1950's is yet unclear, conclusions suggested by a comparison of rates of growth with that planned for 1959-1965 must be cautiously framed. Considering rates of growth exhibited by GNP series, it was concluded in Chapter II that the evidence did not support a hypothesis of expected deceleration in the rate of growth. The official national income data would offer strong support of such a hypothesis, if the validity of the data in the 1950's could be accepted.[2] So long as doubt remains, it would be preferable to focus on GNP in growth comparisons.

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[1] Ibid., pp. 189-191.

[2] Comparison of the rate of growth of Bergson's national income series (Soviet definition) with the Seven Year Plan rate also suggests an intended or expected deceleration. Bergson's reconstruction is somewhat different from that set out in this paper and differences in coverage between his and the official series may affect the calculated rates of growth.

ADDENDUM TO CHAPTER IV: INCOME AND OUTPUT OF COLLECTIVE FARMS

In Appendix A it is estimated that the Seven Year Plan target for output increases by the collective farms is 80 per cent. In Appendix C money incomes and outlays in 1965 plan are estimated as no more than 59 per cent larger than in 1958. Are these plan targets consistent? Consistency implies, roughly, a doubling in the value of that part of gross output not realized in the form of money income.[1] Is there any evidence that so large an increase is planned?

Gross output that is not realized in money income may be considered in three categories of disposition -- payments in kind to collective farmers, increments to inventories and herds, and seed and feed used as inputs into production during the year. Payments in kind in 1958 are estimated as 37.9 billion rubles, the increment in livestock herds (excluding poultry and horses) on collective farms (in Appendix Table E-1) as 7.7 billion rubles, while inventory investment in that year accounted for an additional 10-20 billion rubles.[2] This leaves

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[1] The value of collective farm gross output is estimated as 267 billion rubles in 1958 and 480 billion rubles in 1965. This estimate rests on the assumption that the share of collective farms in gross output at 1956 prices, 55 per cent, is about the same for gross output at 1958 prices. The value of all gross agricultural output in 1958 at 1958 prices was 485 billion rubles (N. kh. 1960, p. 365), about 3 per cent greater than the corresponding value in 1956 prices, 472 billions (N. kh. 1959, p. 311). Money income in 1958 was 132 billion rubles and for 1965 is estimated as 210 billions (see Appendix C, item 1.A). Not all money income represents disposal of gross agricultural output, but the amount is small enough to be ignored. This leaves 135 billion rubles in 1958 and 270 billions in 1965 of gross output not realized in money income.

[2] A table in Vsesoiuznyi nauchno-issledovatel'skii institut ekonomiki sel'skogo khoziaistva, Povyshenie urovnia razvitiia kolkhoznogo proizvodstva, Moscow: Ekonomizdat, 1961, p. 108, shows current assets of collective farms by major category at the beginning of the year in 1958-1960 as per cent of values at the end of 1950:

	1958	1959	1960
Current assets			
In "sphere of production"	247	587	632
In "sphere of circulation"	248	307	241
Total	247	449	441

The value of current assets on 1 January 1960 can be obtained from Akademiia nauk SSSR, Institut ekonomiki, Obshchestvennye fondy kolkhozov i raspredelenie kolkhoznykh dokhodov, Moscow: Ekonomizdat, 1961. On p. 196 of this work, the value of current assets in "circulation" at the beginning of 1960 is given as 24.8 billion rubles. This sum includes 1.3 billion rubles of purchased materials, which are deducted as properly belonging with assets in "sphere of production," judging from a detailed per cent distribution of all current assets on 1 January 1959 and 1960 appearing on p. 198 of this work. These data imply values of total current assets at the beginning of 1960 of 92.5 billion rubles, of which 23.5 billions are assets in the "sphere of circulation" and 69.0 billions are assets in the "sphere of production." Corresponding values for 1958 and 1959 can then be obtained by means of the data from Povyshenie... cited at the beginning of this note. The results are as follows (in billions of rubles):

	Value of current assets held on 1 January	
	1958	1959
In "sphere of production"	27.0	64.1
In "sphere of circulation"	24.2	29.9
Total	51.2	94.0

The indicated totals for 1958 are sums of the components. Calculated from the 1960 total and the percentage changes in 1958 and 1959, the totals are 51.8 and 94.2 billions, or 1.2 and 0.2 per cent, respectively, greater than the totals as sums of components.

The entire increment of assets in the "sphere of production" represents real inventory change, but assets in the "sphere of circulation" are largely financial claims. Unfortunately, distributions are not available for the beginning-1958 stocks so that elimination of financial claims must be somewhat impressionistic. Judging from changes in the collective farm's current account bank balance--the current account bank balance represented roughly half of financial claims at the beginning of 1960 and more than three-fifths the year before (Obshchestvennye fondy..., p. 198)--the lower limit of inventory change in 1958 may be estimated as about the increment of assets in the "sphere of production," 37 billion rubles, while the upper limit is perhaps 10 billion rubles higher. The reasoning is as follows: The current account bank balance of the collective farms increased 1.5 billion rubles in 1958 (N. kh. 1958, p. 913). If other financial claims increased by 5.0 billion rubles (which seems very high), stocks of finished output, the remaining component of assets in the "sphere of circulation," decreased by 0.8 billion rubles. If other financial

roughly 65 to 75 billion rubles as the value of seed and feed consumed in production during the year.[1]

Payments in kind are estimated as increasing slightly less than a third by 1965, hence the hypothesized doubling in gross output, exclusive of that realized in money income, depends on a more than twofold increase in the sum of (i) additions to inventories and herds and (ii) intrafarm consumption of seed and feed in production. There is little known on Seven Year Plan targets for collective farm inventories or livestock herds. Moreover, since the value of seed and feed inputs is by far preponderant, planned changes in this element are the crux of the test of consistency posed.

The Seven Year Plan provides for at least a doubling of hay output, compared with 1957, at least a quadrupling of silage, and an approximate doubling of potatoes used as feed. The projected increase in grain output is to result in the allocation of 85-90 million tons

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claims decreased by 5.0 billion rubles (which seems equally unlikely), finished output increased by 9.2 billion rubles. The estimate of inventory change adopted here is around 40 billion rubles. However, a major part of this impressive value represents capital gains on account of the agricultural price increases in 1958. In addition, part of the inventory investment consists of increments of stocks of immature cattle which are, presumably, included in the statistics that serve as the basis for this paper's estimate of the livestock component of fixed investment. For these reasons, the inventory investment estimate of 40 billion rubles must be sharply cut. It is only a guess that the cut need not be larger than 50-75 per cent.

[1] As a rough order of magnitude check on this estimate, compare the following data for all agricultural sectors from the 1959 input-output table, in billions of rubles (N. kh. 1960, p. 143):

Purchases from	By Crops	By Livestock	By All agriculture
Crops	26.76	81.09	107.84
Livestock	0.45	16.07	16.52
All agriculture	27.21	97.16	124.36

Total gross agricultural output in 1959 was virtually unchanged from the 1958 level, as was collective farm output. However, output of the state farms rose about 9 per cent. TsSU, Sel'skoe khoziaistvo SSSR, Moscow: Gosstatizdat, 1960, pp. 48, 61, 79.

of concentrated fodder in 1965.[1] The corresponding figure for 1958 is in the area of 40 million tons.[2]

A positive conclusion drawn from this incomplete evidence must necessarily lack full assurance. However, the data neither prove nor imply inconsistency of the estimates of collective farm income and output targets. Consistency seems at least possible.

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[1] Sel'skoe khoziaistvo SSSR, p. 379.

[2] Based on a figure of 31.7 million tons in collective and state farms given in TsSU, SSSR v tsifrakh v 1961 godu, Moscow: Gosstatizdat, 1962, p. 193.

V. RETROSPECT AND PROSPECT

The calculations of this study yield a Seven Year Plan growth rate of GNP of 7.4 per cent per year. If comparisons may be made with Bergson's measure of GNP at factor cost, the Soviet economy was expected to grow at about the same pace as in the 1950's. The Plan growth rate for gross investment in fixed capital other than livestock at 8.7 per cent[1] is considerably higher than the rate for GNP as a whole; the gap is even larger comparing either communal expenditures (health care and education) or outlays on science, the armed forces, and the like, with GNP. On the other hand, at 5 per cent, the goal for growth of per capita consumption is lower than any of the rates observed in the 1950's.

The pace of capital formation in 1959-1965 was expected to be rapid indeed. The rate of net investment (net investment as a share of GNP) was probably rising throughout the 1950's but was to continue to grow in the first half of the 1960's. The targeted rate of growth of net investment is 9.8 per cent per year, bringing about a terminal year capital stock four-fifths larger than at the beginning of the Plan. The rate of growth of the capital stock is as high or higher than the average rate obtained in the 1950's.

How has the Seven Year Plan fared since its announcement? Table 20 provides a preliminary summary view of the progress of the Plan through 1962. The first column in the table gives realized data for 1962. Column two shows what could be attained by 1965 if growth rates of the four year span 1959-1962 were maintained through the rest of the Plan period. The last column shows original Seven Year Plan targets for 1965.

With the major exception of agricultural indicators, the picture provided in Table 20 is one of successful realization of planned growth rates. At rates achieved between 1958 and 1962 the original

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[1] With capital repairs included; excluding capital repairs, the rate is 9.0 per cent.

Table 20

PROGRESS OF THE SEVEN YEAR PLAN, SELECTED INDICATORS
(Indexes 1958 = 100)[a]

	Realized 1962 (1)	1959-1962 trend projected to 1965 (2)	Seven Year Plan Target 1965 (3)
National income, Soviet definition	132	163	162-165
Gross industrial output	145	192	180
Gross agricultural output	107-110	113-118	170
Freight transport	132	163	156-159
Gross investment, excluding livestock and capital repairs			
State-cooperative sector	141	182	184
Collective farm	110-115	118-128	222
Private housing	80	decline	132
Total	133	165	183
Retail trade turnover, excluding collective farm market and commission trade	132	162	162
Workers and employees, average annual	122	142	122
Gross output per man-year			
Industry	125	148	145-150
Construction	130	158	160-165
Collective farms	114[b]	136[c]	200
State farms	97[b]	decline[c]	160-165

Notes:

[a]The unit of measure in the original data underlying the indexes is rubles at constant prices for national income, industrial and agricultural output, investment (estimate prices), and retail trade turnover. For transport the unit of measure is ton-kilometers of freight turnover; for workers and employees it is number of employed.

[b]Index number for 1961.

[c]1959-1961 trend projected to 1965.

Table 20 (continued)

Sources:

Column (1). Except where otherwise indicated, sources are TsSU, Narodnoe khoziastvo SSSR v 1961 godu, Moscow: Gosstatizdat, 1962, pp. 67, 128, 130, 170-171, 293, 473, 535-536, 538, 546, 566; the 1963 budget and plan speeches at the Supreme Soviet meeting, published in Izvestiia, December 11, 1962; and the CSA 1962 plan fulfillment report, published in Pravda, January 26, 1963.

Index numbers for gross agricultural output, collective farm and private housing investment, and total investment are estimated:

Gross agricultural output. The 1962 index number is estimated on the basis of the 1961 index number, 106, output data in physical units for 5 basic crops and the 4 basic livestock products (1962 plan fulfillment report) and weights estimated from the calculation in Appendix Table A-1, taking rough account of price changes occurring in 1958.

Collective farm investment. The 1962 plan fulfillment report has nothing more to say on this subject than "Capital investment by collective farms was also of large magnitude." The cryptic nature of this statement and the fact that it follows a reference to noncentralized investment that neglects to mention that the stated magnitude represents a decline from the previous year leads me to believe that if collective farm investment increased in 1962, the increase was small. The 1961 index number was 111.

Private housing investment. The 1961 index number was 89. In physical units, new private urban housing declined from 23.7 million square meters in 1961 (N.kh.1961, p. 613) to about 20 million square meters in 1962, while private rural housing declined from "more than" 500,000 dwellings (1961 plan fulfillment report in Izvestiia, January 24, 1962) to 450,000 units in 1962.

Total investment. The 1962 index number was obtained on the basis of the 1961 index number and the sum of investment components for 1962, estimated or cited in the sources indicated.

Column (3). Gross investment from Table G; freight transport from N.kh.1960, p. 531; all others from Control Figures.

1965 targets for national income, retail trade and industrial labor productivity would be reached exactly; the goals for industrial production, freight transport turnover, and state employment would be overfulfilled, the last by a very large margin. The margin of possible underfulfillment is small for construction labor productivity and for gross investment by the state-cooperative sector. On the other hand, none of the agricultural targets -- output, productivity, or investment -- is likely to be attained. The Seven Year Plan target for private housing has been scrapped.[1]

The indicated growth in national income may appear suspiciously high in view of the small increase in agricultural output. However, the failure of agricultural output to grow as expected may have been made up by the overfulfillment of the gross industrial output targets, and by the growth of freight transport[2] and construction.[3]

A somewhat different view is presented in Table 21, showing national income, Soviet definition, by use at current prices in 1958, 1961, and 1965 plan. Household consumption is shown to have grown by 18 per cent in 1959-1961. The estimated target, however, calls for an increase by 1965 of better than 53 per cent. At the attained rate of growth, the goal would not be fulfilled. This is true of institutional consumption as well, and consequently, for the consumption fund as a whole.

Through 1961, the growth of net fixed capital investment was far behind schedule. At the 1959-1961 rate of increase, the 1965

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[1] See above p. 2.

[2] In terms of ton-kilometers, freight turnover rose by 24 per cent in 1959-1961, but the increase in value terms is probably larger since truck transportation, with average costs far higher than rail transport, showed an increase in turnover larger than that for all freight transport or for rail transport alone. N.kh.1961, p. 473.

[3] A calculation of national income by branch of origin in 1958 and 1961 (ibid., p. 598, and the 1958 national income total derived in sources for item C of Table 18 above) yields increases of net output in current prices of 25 per cent for industry, 22 per cent for construction, 6 per cent for agriculture, 54 per cent for transport and communication, 22 per cent for other branches, 21 per cent for total national income. The increase in transport and communication does appear high; the others do not appear unreasonable.

Table 21

NATIONAL INCOME, SOVIET DEFINITION, BY USE, 1958, 1961, 1965 (billion rubles)[a]

	1958	1961	1965
1. Consumption fund			
A. Household consumption	819	969	1250[b]
B. Material outlays in non-productive organizations and institutions	81	116	220[b]
C. Total	900	1085	1470
2. Accumulation fund			
A. Net increase fixed capital	205	254	395
B. Net increase of inventories and state reserves	128	173	165
C. Total	333	427	560
3. National income, net of losses	1233	1512	2030

Notes:

[a]1958 and 1965 values at 1958 prices; 1961 values at 1961 prices.

[b]Household consumption is somewhat understated and the rest of consumption fund correspondingly overstated. See above, pp. 95-96.

Sources:

1958 and 1965: Table 18.

1961: N.kh.1961, p. 599.

level reached would be 63 per cent over the 1958 level instead of the estimated target level of 92 per cent. On the other hand, additions to inventories and state reserves increased so rapidly that they were already above the estimated 1965 goal. At the attained rate, the 1965 value would be more than double the 1958 level. In consequence, the total accumulation fund target would be overfulfilled at 1959-1961 rates of growth.

The gaps between estimated targets and projected 1965 values for elements of the accumulation fund are so large that it is necessary to take a closer look at both the net and gross investment data of recent years. An interesting pattern emerges: although net investment in 1961 was 23 per cent higher than the pre-Plan level, all of the growth was achieved in 1959 and 1960 with annual increases of above 11 per cent; the growth in 1961 was an almost imperceptible 0.4 per cent.[1] Gross investment rose 13.3 per cent in 1959, but thereafter the rate of growth dropped precipitously, to 7.9 per cent in 1960 and in 1961 to 4.4 per cent. This reflects a radical change in the sector distribution of investment. In 1959 collective farm investment was a full 25 per cent higher than in 1958 while private housing investment was about 15 per cent higher. Collective farm investment declined in 1960 and was unchanged in 1961; private housing construction declined in both years by substantial margins. Although the growth of investment by the state-cooperative sector in 1960 was slightly higher than in 1959, the rate of increase was cut in half in the following year.[2] Moreover, while the volume of unfinished construction in the state-cooperative sector declined in 1958 for the first time in a decade, it rose by 15.4 billion rubles in 1959, by 23.4 billions in 1960, and by 34.4 billions in 1961.[3]

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[1] Comparing 1959-1961 data in N.kh.1961, p. 599, with the 1958 value of Table 21.

[2] N.kh.1961, p. 535.

[3] Ibid., p. 554.

Returning to the national income data in Table 21, we have already noted the extraordinary increase in inventories and reserves between 1958 and 1961, an increase greater than that estimated as planned for the entire 1959-1965 period. In Table 22 an attempt is made to separate total inventory investment, shown in row 1.C. from the sum of additions to inventories and state reserves, shown in row 2. The difference represents additions to state reserves (row 3).[1] Allowing for the approximate nature of the estimate of collective farm inventory investment in 1960-1961, Table 22 nevertheless offers a striking view of a rapidly mounting government stockpiling program. Increments to state reserves in 1960 were more than two-and-one-half times as large as in 1959 and in the following year rose by an additional one-sixth to one-quarter.[2]

It is probably unnecessary to remind the reader of a point noted earlier,[3] that an important component of state reserves is military hardware, at least of some categories of hardware. We still know little about the distribution of state reserves or of the increments thereto -- the relation between current material operating reserves, long-term stockpiling of "strategic" industrial materials and, in Bor's euphemism, "means of defense of a special nature."[4]

Stockpiling is presumably one of the components of item 6, "other outlays" in Table D. The other major element is outlays on science. Total outlays on science, including capital expenditures,

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[1] Table 22 takes no account of private sector inventories, owing to an absence of data, but this omission is unlikely to be significant.

[2] So far as is known, price changes in these years were not of a magnitude likely to affect the general view drawn here.

[3] Above, p. 98.

[4] Soviet military doctrine seems to hedge on the issue of the present likelihood of the short nuclear exchange versus the war of attrition on the model of World War II. Stress is put on the importance of both strategic commodity stockpiles and reserves of military hardware. See, for example, the presumably authoritative volume edited by Marshall V. D. Sokolovskii, Voennaia strategiia, Moscow: Voennoe izdatel'stvo Ministerstva oborony SSSR, 1962, pp. 363-364, 369, 373-374, 381-391. (I am grateful to Oleg Hoeffding for drawing my attention to this source.)

Table 22

INVENTORY INVESTMENT IN THE PUBLIC SECTOR AND ADDITIONS TO STATE RESERVES, 1959-1961
(billion rubles)

	1959	1960	1961
1. Inventory investment			
A. Collective farms	2.3	2-5	2-5
B. Other public sector	96.7	46.8	73.8
C. Total	99.0	49-52	76-79
2. Inventory investment and additions to state reserves, official data	128	129	173
3. Additions to state reserves, row 2 less row 1.C.	29	77-80	94-97

Sources:

1. Inventory investment

A. Collective farms

1959: This is the sum of an increment of current assets in the "sphere of production" of 4.9 billion rubles and a 2.6 billion-ruble decline in finished goods, the component of assets in the "sphere of circulation" that represents real inventories. The former value may be obtained directly from the data cited above, p. 103; the latter value may be calculated from shares of finished goods in the total volume of current assets at the end of 1958 and 1959 given in Obshchestvennye fondy kolkhozov i raspredelenie kolkhoznykh dokhodov, p. 198, and the absolute values of total current assets given on p. 103, above.

1960 and 1961: Direct information on collective farm inven- inventories is not available. Indirect evidence suggests little likelihood of a substantial increase; money incomes declined in 1960, rose by barely 2 per cent in 1961; herds of cattle were basically unchanged from the end-1959 level with hogs increasing and sheep decreasing; investment declined in both years. A major factor was the transformation of many collective farms into state farms. This is partly reflected in the decline of the number of collective farm households from a level of 18.8 million in 1958, to 18.5 million in 1959, 17.1 million in 1960, and 16.4 million in 1961 (N.kh.1961, pp. 382-383, 418, 436, 546).

Table 22 (continued)

B. Other public sector. N.kh.1961, pp. 70, 71, 73, and Vestnik statistiki, 1962, No. 11, pp. 83, 86. Inventories are taken to be the value of "commodity-material values" (tovarno-materialnye tsennosti), less prepaid expenditures, plus "goods in transit and services performed" (tovary otgruzhennye i okazannye uslugi). For a discussion of the meaning of these categories, see Appendix D, item 3.B.

2. Inventory investment and additions to state reserves

N.kh.1961, p. 599.

increased 80 per cent in 1959-1962,[1] implying a rate of growth sufficient almost to triple the 1958 level by 1965. Military stockpiling rates cannot be quantified but on the evidence of Table 22 they are likely to have been high in 1960-1961. Attainment of the estimated 170 per cent increase by 1965 in "other outlays" in Table D does not seem inconceivable.

At this writing (February 1963), the end-use breakdown of national income in 1962 has not yet been released. Judging from the sharp 20 per cent increase claimed for centralized gross capital increments (vvod v deistvie) in 1962,[2] the rate of growth of net investment may have picked up somewhat in 1962, despite the continued sluggish pace of growth of collective farm investment and decline of private housing construction.

However, the prospects of the Plan also appear dimmed when sources of finance are considered. The volume of state budget revenues increased 16 per cent by 1961; projected to 1965, the implied rate of growth would mean underfulfillment of the estimated target by 17 per cent. Although proceeds from profit taxes jumped more than 50 per cent, the increase in turnover tax proceeds was a bare 1 per cent in the three years. As a result, total so-called "contributions from the socialist sector" rose just 18 per cent.[3] This is, presumably, the background of the Soviet decision in the fall of 1962 to suspend the reduction and gradual elimination of income taxes on the population.[4]

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[1] N.kh.1961, p. 764, gives the total from all sources in 1961 as 3.8 billion rubles, compared with 2.4 billion in 1958. The 1962 planned level was 4.3 billion (1962 budget speech in Pravda, December 7, 1961) and the 1963 target has been set at 4.7 billion rubles (1963 budget speech in Izvestiia, December 11, 1962).

[2] Speech on the 1963 plan, Izvestiia, December 11, 1962.

[3] N.kh.1961, p. 762.

[4] V. Lavrov ("Gosudarstvennyi biudzhet -- vazhnoe orudie planovogo rukovodstva," Planovoe khoziaistvo, 1962, No. 2, p. 39) claimed that the volume of budget revenues and outlays for the four-year period 1959-1962 plan (using the original 1962 budget targets) was "somewhat

Actual budget revenues in 1962 were expected (in December 1962) to reach 847 billion rubles or 8.6 per cent more than in 1961. However, the 1963 target calls for an increase far less than half as large, only 3.4 per cent, to a level of 876 billion rubles.[1] It is doubtful that the Seven Year Plan goal of 1150 billion rubles in 1965 is now attainable.

The 1962 plan fulfillment report pleads extenuating circumstances: "A larger share of national income than was contemplated in the Seven Year Plan has been allocated to expansion of Socialist production and strengthening the defense capability of the country."[1] Indeed, rapid increases in Soviet military outlays and in expenditures on research and development have become familiar notes in the news. Evidence of the strain put on the Soviet economy is reflected in lagging agricultural output, investment, and state revenues. A planned rate of growth of per capita consumption, which was the smallest in a decade, is in danger of being cut further. Complete data for 1962 are not yet available, but the increases of meat and butter prices in the spring and the abrupt cancellation of the income tax reduction program are actions that seem to confirm the conclusion that the Seven Year Plan is in trouble. Unless remedial action can be taken in the final three years of the Plan, actual results in 1965 are likely to be wide of the original mark.

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larger" than the sum provided for in the Seven Year Plan. It is difficult to understand this claim. If it means that the rate of growth of budget revenues in the period stated is more than adequate, projected through 1963-1965, to reach the 1965 Seven Year Plan goal, it implies a 1965 target of about 950 billion rubles that is inconsistent with all other available evidence. Perhaps it is significant that the Minister of Finances, Garbuzov, has made no such claim, either in his 1962 budget article ("Uspeshno vypolnit' biudzhet chetvertogo goda semiletki -- vazhneishaia zadacha finansovykh organov," Finansy SSSR, 1962, No. 1, pp. 3-18) or in his speeches to the Supreme Soviet on the 1962 budget (Pravda, December 7, 1961) and the 1963 budget (Izvestiia, December 11, 1962).

[1] Izvestiia, December 11, 1962.

Appendix A

NOTES TO TABLE A

1958

From SNIP 1956-1958, Table 1, Part A.

1965

1. Net income of households from agriculture

Wages of state-employed farm labor and wages of labor hired by collective farms are excluded here. These income categories form part of the worker and employee wage bill (SNIP 1949-1955, pp. 62-63), which is estimated below (this Appendix, item 2.A). Included here are incomes of collective farm households from collective farm distributions and from private plots, incomes of workers and employees (a shorthand designation employed throughout this work for wage and salary earners--rabochie i sluzhashchie) from private plots, and incomes of noncollective farm peasants.

In the absence of any direct information on the 1965 targets for these income components, they have had to be estimated by a lengthy, circuitous process of reasoning centering on two groups of Seven Year Plan goals, output and productivity targets and the planned increase in real income per collective farmer. The procedure is admittedly hazardous but there seems to be no alternative.

Sectoral shares in gross output, 1958

The first steps center on estimation of the expected increase in real gross agricultural output of the private sector. The Plan provides explicitly for a 70 per cent increase in gross output of agriculture as a whole and for productivity increases of 100 per cent on collective farms

and 60-65 per cent on state agricultural enterprises. In order to estimate the expected increase in private sector output, it is necessary first to determine the 1958 shares of the different sectors in gross output. These shares are not available from Soviet sources but may be computed with what appears to be fair reliability from two sets of data: sector shares in gross output in 1950-1956, estimated by Johnson and Kahan ("Soviet Agriculture: Structure and Growth," Comparisons of the United States and Soviet Economies, 1959, Part I, p. 207), and official Soviet output indexes for all agriculture, collective farms, and state farms for the period since 1950 (TsSU, Sel'skoe khoziaistvo SSSR, 1960, hereafter referred to as S. kh. 1960, pp. 48, 60-61, 79, 81-82). It would appear that the weights employed in the official series are 1951 prices for years through 1956 and 1956 prices for later years, although this cannot be established with certainty except with regard to the output series for agriculture as a whole (N. kh. 1959, pp. 836-837).

Since Johnson-Kahan employ 1926/27 price weights in their calculation, while the goal of ours is to approximate sector shares in 1956 prices, there is a risk of considerable error in operating with these two sets of data. Moreover, it is not self-evident how the possible error is affected by using the Johnson-Kahan shares in either 1950 or a later year as a basis for the calculation. For example, the Johnson-Kahan index with 1926/27 price weights (op. cit., p. 204) increases less rapidly between 1950 and 1953, more rapidly between 1953 and 1956, and, on balance, for the whole of this period, more rapidly than the official index based on 1951 price weights. However, the results of the calculation of sector shares in 1958 based on the Johnson-Kahan 1950 shares do not differ substantially

from those obtained on the basis of the Johnson-Kahan 1956 shares. Somewhat arbitrarily, the Johnson-Kahan 1950 shares are used for the computation below. As will be shown, the results do not seem to be grossly wide of the mark.

	Collective farms (1)	State farms (2)	Institutional farms (3)	Private sector (4)	All sectors (5)
1. 1950 shares (Kahan-Johnson)	.542	.057	.011	.390	1.000
2. Official index numbers for 1958, 1950 = 1.0	1.62	4.00	not available		1.58
		1.82			
3. Computed 1958 shares	.556	.144	.300		1.000
		.690	.310		1.000

Multiplying the 1950 shares by the official index numbers and then dividing each product by 1.58 yields the computed 1958 shares of row 3. The combined share of collective and state farms in 1958 is 70.0 per cent and that of institutional farms and the private sector is, by subtraction, 30.0 per cent, if the calculation is based on the separate index numbers for collective and state farms; the respective shares are 69.0 and 31.0 per cent, if the calculation is based, instead, on the official index number for state and collective farms. The very small discrepancy between these two sets of sector shares appears to confirm the Johnson-Kahan ratio of the collective farm share to that of the state farms in 1950.

The reliability of the estimates of 1958 sectoral output shares can be checked by direct calculation of the 1958 value of gross output by sector, in 1956 prices, of eleven major products for which price and quantity data are available. These products are grain, potatoes,

vegetables, sugar beets, cotton, sunflower seed, flax fiber, meat, milk, eggs, and wool. The details of the calculation are shown in Appendix Table A-1 and the results reproduced below:

Value of Gross Output in 1958 of Eleven Products at 1956 Prices, by Sector

Sector	Crops	Livestock	All products	
	Billion rubles		Bill. rubles	Per cent
Collective farms	114.3	55.1	169.4	48.0
State farms	20.0	19.0	39.0	11.1
Institutional farms	5.6	5.1	10.7	3.0
Private sector	49.2	84.6	133.8	37.9
	189.1	163.8	352.9	100.0

The computed value of gross output of crop products represents two-thirds of the official value in 1956 prices of the gross output of all crops and 87 per cent of the official value of livestock products (S. kh. 1960, p. 22). Per cent distribution by sector of the 1958 tonnage output of the major unrepresented crop products was as follows (S. kh. 1960, pp. 202-207, 254).

	Collective farms	State farms	Institutional farms	Private sector
Fiber-flax seed	99.5	0.3	--	0.3
Hemp, Russian				
seed	88.6	--	--	11.4
fiber	93.6	1.1	--	5.3
Hemp, southern				
seed	94.1	5.9	--	--
stalks	88.1	11.5	--	0.4
Linseed	89.9	9.2	0.9	--
Castor	78.6	21.4	--	--
Soya	81.7	15.7	1.7	0.9
Mustard	78.6	21.4	--	--
Tobacco	92.2	6.9	--	0.9
Makhorka	67.9	6.6	0.9	24.5
Silage crops	80.0	18.5	1.5	--
Fodder roots	60.4	15.9	4.8	18.9
Hay	71.4	22.5	5.0	1.1
Fruits and berries (1959 data)	19.8	12.9		67.4

Appendix Table A-1

VALUE OF GROSS OUTPUT IN 1958 OF ELEVEN FARM PRODUCTS AT 1956 PRICES, BY SECTOR[a]

Product	Gross output of collective farms			State farms						Gross output of institutional farms			Gross output of households			Gross output all sectors	
				Gross or market output			Nonmarketed output										
	Price	Quantity	Value	Price	Quantity	Value	Price	Quantity	Value	Price	Quantity	Value	Price	Quantity	Value	Quantity	Value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
A. Crops																	
1. Grain	532	96,038	51,092	425	21,904	9,309	325	17,339	5,635	1,400	2,815	3,941	532	3,120	1,660	141,216	71,637
2. Potatoes	675	25,066	16,920	450	703	316	479	2,387	1,143	750	1,329	997	675	57,042	38,503	86,527	57,879
3. Vegetables	1,302	5,785	7,532	600	1,198	719	543	224	122	600	966	580	1,302	6,692	8,713	14,865	17,666
4. Sugar beets	240	52,062	12,495	215	2,229	479	--	--	--	215	101	22	--	--	--	54,392	12,996
5. Cotton	3,680	3,789	13,944	3,450	576	1,987	--	--	--	3,450	8	28	--	--	--	4,373	15,959
6. Sunflower	1,500	4,022	6,033	800	377	302	--	--	--	800	33	26	1,500	194	291	4,626	6,652
7. Flax	14,488	435	6,302	14,488	2	29	--	--	--	--	--	--	14,488	1	14	438	6,345
All crops			114,318			13,141			6,900			5,594			49,181		189,134
B. Livestock																	
8. Meat	5,024	5,025	25,246	5,500	1,526	8,393	8,080	149	1,204	5,000	600	3,000	5,024	7,200	36,173	14,500	74,016
9. Milk	1,133	21,281	24,111	1,220	5,024	6,129	1,276	416	531	2,200	870	1,914	1,133	31,083	35,217	58,674	67,902
10. Eggs	583	2,146	1,251	500	1,095	548	562	83	47	850	162	138	583	19,554	11,400	23,040	13,384
11. Wool	25,810	175	4,517	28,000	75	2,100	--	--	--	28,000	3	84	25,810	69	1,781	322	8,482
All livestock products			55,125			17,170			1,782			5,136			84,571		163,784
TOTAL Crops and Livestock products			169,443			30,311			8,682			10,730			133,752		352,918

Notes:

-- Means output is zero or less than 500 tons.

[a] Except for eggs, prices are rubles per ton and quantities are thousand tons. For eggs, prices are rubles per 1,000 and quantities are million eggs. All values are million rubles.

Table A-1 (continued)

Sources:

Prices

Collective farms and households. Prices of grain, potatoes, vegetables, meat, milk, eggs represent average realized prices in all sales involving collective farms and households: compulsory and above-quota deliveries, payments to MTS, decentralized deliveries, commission sales, and collective farm market sales. The average realized prices were computed from a calculation of farm consumption in-kind made by Nancy Nimitz (SNIP 1956-1958, Appendix Table A-3). Prices of sugar beets, cotton, wool, and flax from Nimitz, "Soviet Agricultural Prices and Costs," Comparisons of the United States and Soviet Economies, Part I, Table 13, p. 266. These are average procurement prices received by collective farms and in the absence of other information are assumed to be applicable to prices received by households for flax and wool (cotton and sugar beets are not produced by households). The price for sunflower seed is an estimate by Nancy Nimitz.

State farms, marketed output. Prices of grain, potatoes, vegetables, meat, milk and eggs from SNIP 1956-1958, Appendix Table A-3. Prices of other products are estimates by Nancy Nimitz.

State farms, nonmarketed output. In accordance with Soviet procedure, these products are valued at average cost. Average costs are given in Nimitz, "Soviet Agricultural Prices and Costs," Table 12, p. 261.

Institutional farms. Prices of grain, potatoes, vegetables, meat, milk and eggs from SNIP 1956-1958, Appendix Table A-3. For other products state farm prices were used.

Quantities

Gross output from S. kh. 1960: Crops, pp. 202-207; milk, eggs, wool, pp. 335-336; gross output of meat, live weight basis, by all producers, all nonhousehold producers, and state and collective farms alone, pp. 329, 330, 332. The combined total for collective and state farms of 6.7 million tons was distributed in proportion to their relative shares in the output of meat, slaughter weight (p. 334), 75:25.

Marketed output of state farms. SNIP 1956-1958, Appendix Table A-3.

Nonmarketed output of state farms. Residual, subtracting marketed from gross output.

This distribution strongly suggests that more complete coverage in calculating the value of gross output would raise the computed shares of the state and collective farms, especially the share of the collective farms, and lower those of the institutional farms and the private sector. In a rough calculation that ignored output of by-products (straw, hay, root crops, etc.) and unfinished production, J. A. Newth ("Soviet Agriculture: The Private Sector, 1950-1959," Soviet Studies, October 1961, pp. 170-171) estimated the share of the private sector in total gross output as 34.5 per cent.

On the basis of the foregoing, the 1958 value of gross output shares are estimated as: collective farms, 55 per cent; state and institutional farms, 15 per cent; private sector, 30 per cent.

Seven Year Plan output targets, by sector

Given the 1958 sector shares, we must now derive the Seven Year Plan output increases. These can be estimated only with great difficulty and subject to a considerable margin of error, for they must be inferred from the Plan's productivity targets and some fragmentary data on projected changes in the collective farm labor force. The nature of the productivity targets is also uncertain. According to an official text for universities and higher agricultural institutes (Kuvshinov et al., Ekonomika sotsialisticheskogo sel'skogo khoziaistva, 1959, pp. 87-88), "The basic aggregate indices of agricultural labor productivity in use in the central planning organs is the volume of all gross output of collective and state farms in constant prices divided by annual average employment...and by man-days (man-hours) worked." We have not been told whether the denominator of published productivity targets is employment or man-days. Since it appears that the government desires and expects both an increase in the number of

days worked per man and a decline in collective farm employment, the productivity increase will be larger if based on employment than on man-days worked. I will assume that the Seven Year Plan targets represent output divided by number employed.

Collective farms. Productivity on collective farms is to double by 1965 compared with 1958. The Plan makes clear that employment is expected to decline in this period. For the 1958 level of employment we have the following estimates (S. kh. 1960, pp. 450, 459, 460-461):

		Millions
(i)	Average annual employment in all collective branches of all collective farms, excluding tractor brigade workers, representing the average of monthly number of employed, including all who work at least one day a month	24.9
(ii)	Average annual employment [defined as in (i) above] in collective agricultural branches in all collective farms, excluding tractor brigade workers	22.0
(iii)	Average annual employment [defined as in (i) above] in all collective branches of agricultural collective farms, possibly including tractor brigade workers	25.1
(iv)	Number employed at least one day in all collective branches of agricultural collective farms:	
	maximum during year (July)	31.9
	minimum during year (January)	18.5

F. I. Kotov (Voprosy truda v semiletnem plane, 1960, pp. 112-113) has estimated that collective farms would need to release three million persons to help satisfy requirements for expansion of the state labor force. The same figure, represented as a minimum, is cited in Voprosy ekonomiki, 1960, No. 11, p. 61. Presumably, this number is to be subtracted from the

maximum in estimate (iv) above, if not, indeed, from some larger figure which would include collective farm family members who work on private plots but who do not engage in collective farm operations at all in the course of the year. At any rate, Kotov's estimate suggests a decline of no more than 10 per cent in the size of the collective farm labor force. If it can be assumed that this is equivalent to the same relative loss on an annual average basis, for comparison with the productivity target which is assumed to be defined equivalently, the collective farm output target would be an increase of 80 per cent.

Higher estimates of the manpower due to be released from collective farms are also to be found in Soviet sources. A. Gol'tsov declares (Sotsialisticheskii trud, 1960, No. 5, p. 39): "Calculations show that the planned seven year increase in gross agricultural output, in the context of insuring a doubling of labor productivity [in collective farms], will lead to the release of not less than 15 per cent of the work force now utilized on the collective farms." Academician Strumilin has stated that the collective farm productivity target "presupposes" (predpolagaet) a release of at least 12 million workers from the collective farms (Voprosy ekonomiki, 1960, No. 7, p. 94). I cannot make any sense of this figure.

Given the planned doubling of labor productivity, a decline in employment of 10 per cent implies an output increase target of 80 per cent -- a 15 per cent employment decrease, output growth by 70 per cent.

State agricultural enterprises. At the December 1958 plenum of the Party Central Committee, Khrushchev declared (Pravda, 16 December 1958) that the quantity of "basic" farm produce marketed by the state farms in 1965 would be 2 to 2½ times the 1957 level; marketing of sugar beets was to

quadruple. The state farms were to be charged with the chief responsibility for supplying potatoes and vegetables to towns and industrial centers. On the basis of planned 1965 state farm shares in total procurement cited by Khrushchev at the Plenum, the Seven Year Plan targets for total procurements, and data on state farm deliveries in 1958 (S. kh. 1960, pp. 106, 108, 112), the planned increases in state farm deliveries in the seven years may be estimated as more than 100 per cent for wool and milk and almost 150 per cent for meat. While the expected increase in deliveries of grain is small, perhaps 10 per cent, the Plan implies that production of grain for use as fodder on the farm is to grow considerably more rapidly.

Direct information on output targets of the state farms for the USSR as a whole is not available, but the planned increases for RSFSR state farms, which probably account for considerably more than half the gross output of all USSR state farms, can be derived from other data (Appendix Table A-2).

Output goals for the Ukraine's collective farms and state farms together are available for the four chief livestock products--meat, milk, eggs, and wool. The targets are increases of, respectively, 323, 209, 250, and 93 per cent (Ekonomika sel'skogo khoziaistva, 1959, No. 2, p. 31). It is probably safe to assume that the planned production increases for Ukrainian state farms are as large as or larger than those for the republic's collective farms. The combined output of state farms in the RSFSR and the Ukraine account for from three-quarters to nine-tenths of all USSR state farm output of meat, milk, and eggs, and somewhat less than half for wool. (S. kh. 1960, pp. 344-345, 353, 358, 363.)

From all this it seems clear that the Plan calls for at least a doubling in state farm output and not unlikely for an increase of 150 per cent.

Appendix Table A-2

SEVEN YEAR PLAN TARGETS AND 1958 SHARES OF RSFSR STATE FARM OUTPUT OF MAJOR AGRICULTURAL PRODUCTS

	Per cent increases in gross output of RSFSR state farms, 1959-1965	RSFSR state farm output as per cent of USSR state farm output in 1958
Grain	32	53
Sugar beets	300	47[a]
Sunflower seed	50	68[a]
Potatoes	220+	69
Vegetables	420	48
Meat	220	61
Milk	192	64
Wool	121	44
Eggs	240	76

Note:

[a] RSFSR state farm sown area as per cent of USSR state farm sown area.

Sources:

Except for output of potatoes, RSFSR state farm output in 1958 and 1965 plan from T. Iurkin, "Razvitie sovkhoznogo proizvodstva v RSFSR," Ekonomika sel'skogo khoziaistvo, 1959, No. 3, pp. 43-45. Output of potatoes by RSFSR collective farms and state farms is to increase 220 per cent, according to M. Alisov, "Razvitie ovoshchevodstva i kartofelevodstva v semiletke," ibid., 1960, No. 1, p. 11. Since Alisov also indicates that vegetable output by RSFSR collective farms and state farms is to increase 220 per cent, as compared with the 420 per cent increase for state farms alone shown above, it is likely that RSFSR state farm output of potatoes is to increase by considerably more than 220 per cent. Absolute 1958 output by RSFSR state farms of potatoes, vegetables, meat, and eggs, and 1958 output by USSR state farms of all products, given in S. kh. 1960, pp. 207, 237, 334-336, 345, 358. RSFSR and USSR state farm sown area of sunflower seed in ibid., p. 171.

Note that a seven-year increase in output of 150 per cent in conjunction with a productivity increase of 60-65 per cent implies a better than 50 per cent growth in employment. Very little has appeared in Soviet sources with regard to state farm employment in the Seven Year Plan. One writer on labor problems, M. Ia. Sonin (Vosproizvodstvo rabochei sily v SSSR, 1959, p. 341, note 2), foresees an eventual decline in the state farm labor force but gives no indication when this will take place. In any event, employment in state and institutional farms increased 37 per cent in just the first two years of the Plan period (N. kh. 1960, p. 636).

Private sector. Having estimated the output increases planned for USSR collective and state farms we can now compute the implied residual increase in the output of the private sector. (It is assumed below that the output goal in state farms applies to institutional farms as well. This assumption may be erroneous but cannot affect the results greatly.)

	Collective farms	All state agricultural enterprises	Private sector	All sectors
	(1)	(2)	(3)	(4)
1. 1958 output shares	.55	.15	.30	1.00
2. 1965 index numbers, 1958 = 1.0	1.70-1.80	2.00-2.50		1.70
3. Implied 1965 index number, 1958 = 1.0			1.12-1.55	

The private sector targets implied by alternative output goals for the collective and state farms can be conveniently shown as follows:

Collective farm output increases, alternative assumptions (per cent)	Private sector implied output increase when state farm output increase is (per cent)	
	100	150
70	55	30
80	37	12

It is inconceivable that Soviet planners expected private sector output to increase by anything like 55 per cent. Following Khrushchev's lead, the plenary meeting of The Party's Central Committee resolved on December 19, 1958, to have the state farms buy all livestock held privately by their employees within "two to three years." Although no deadline was set, the state farms were ordered to undertake to "meet in full the requirements of workers and other employees in potatoes and other vegetables." The plenum concluded that "if these measures are implemented, state farm workers and other employees will have no need to work on their individual plots..." (Materials of the Plenary Meeting of the CC of the CPSU, December 15-19, 1958, 1959, p. 164). The Seven Year Plan itself proclaimed:

> As collective farm production develops in conditions where collective farms become large-scale enterprises, equipped with modern machinery and skilled cadres, the material and everyday needs of collective farmers will be increasingly satisfied from the collective economy, and, hence, the private holdings of the collective farmers will gradually lose their significance.

There is reason to believe that private sector output was not expected to increase by even as much as 37 or 30 per cent. The Plan directs a minimum 40 per cent increase in real income per collective farm worker, to be attained largely from the collective economy of the farms. If collective farm employment is to decline by 10-15 per cent, the aggregate increase in real income of collective farmers would be 19-26 per cent. Clearly, this Plan goal is inconsistent with a 30-37 per cent increase in the real output of private holdings on collective farms. Nor is it possible to circumvent the difficulty by postulating a lower rate of growth in private output on collective farms, compensated by a higher rate for the

holdings of workers and employees. The resolution of the December 1958 Party Central Committee Plenum concerning private livestock holdings on state farms is compelling evidence to the contrary.

In addition, one Soviet source (Voprosy ekonomiki, 1959, No. 2, p. 19) has implied a lower rate of growth of net output in the Seven Year Plan on private holdings of workers and employees than on those of collective farmers:

> Already in this seven year period there will be an appreciable increase in the share of national income originating in the collective economy of the collective farms and, correspondingly, a decrease in the share originating in the private holdings of collective farmers. There will be a sharp decrease in the share of national income originating in the private holdings of workers and employees. (Emphasis added.)

I conclude, then, that the planned output increases of the Seven Year Plan are: collective farms, 80 per cent; state enterprises, 150 per cent; private sector, 12 per cent.

Household incomes in 1958

Having estimated the Seven Year Plan expected increases in value of gross output, we must now make the translation to household incomes. For this purpose we may use data provided by A. G. Aganbegian (in MGU, Povyshenie proizvoditel'nosti truda--glavnoe uslovie rosta sel'skokhoziaistvennogo proizvodstva v semiletke, 1960, pp. 124-126): (a) Collective farmer incomes from their private holdings are almost as large as their incomes from the collective economy of the farms; (b) In 1958, incomes from private holdings accounted for about 40 per cent of total collective farmer incomes, including transfer payments and social services; (c) Transfer payments and social services provided by the government and the collective farms (mostly in the areas of public health and education) amounted to about 40 billion

rubles in 1958 or roughly 40 per cent of collective farmer incomes from the collective economy of the collective farms.

These clues imply the following approximate distribution of collective farm household incomes in 1958 (billions of rubles):

(i)	Income from private holdings	90
(ii)	Distributions, money and in-kind, by farms	100
(iii)	Transfer payments, value of social services	40
		230

A. P. Teriaeva ("O garantiinoi denezhnoi oplate truda v kolkhozakh," in Razvitie obshchestvennogo khoziaistva kolkhozov, 1960, p. 150) indicates that money payments formed 57.8 per cent of all collective farm money and in-kind distributions in 1958. Given the SNIP 1956-1958 estimate of 51.9 billion rubles for money payments by collective farms in 1958 (Table 1, Part A, item 1c), Teriaeva's figure implies in-kind distributions of 37.9 billion and money and in-kind distributions of 89.8 billion rubles, somewhat less than the 100 billions derived from Aganbegian but consistent within the wide margins allowed by the latter's highly rounded benchmark figures. Accepting the figure of 89.8 billion rubles, we return to Aganbegian's statements for a revised estimate of collective farm household incomes. The value of social services and transfer payments is set at 38 billion rubles, consistent with Aganbegian's "about 40 billion rubles" and equivalent to 42.3 per cent of total distributions by collective farms. The value of income from private holdings is then obtained as 40 per cent of all collective farmer income, including transfer payments and social services [i.e., from the equation $x = 0.4\ (x + 89.8 + 38.0)$]. The

adjusted distribution is as follows:

		Billion rubles	Per cent
(i)	Income from private holdings	85.2	40.0
(ii)	Distributions by collective farms	89.8	42.2
	Money 51.9 In-kind 37.9		
	Total currently earned income	175.0	
(iii)	Transfer payments, value of social services	38.0	17.8
		213.0	100.0

A delicate problem arising in the handling of this information is the basis of Aganbegian and Teriaeva's valuation of the income in-kind component of collective farm distributions. It is assumed that they followed Soviet statistical practice and employed average prices realized in all transactions (see, for example, A. I. Gozulov, Statistika sel'skogo khoziaistva, 1959, p. 262). Such a valuation is roughly consistent with the treatment in SNIP 1956-1958, Notes to Table 1, Part A, item A.1.e.

Given the 1958 estimate of 213.2 billion rubles for total currently earned income of collective farmers, individual peasants, and workers and employees from private holdings (ibid., Table 1, Part A, items 1.c to 1.e), the income of the latter two household categories is by subtraction 38.2 billion rubles (213.2 - 175.0). We may note in passing the implication that the income of individual peasants and of workers and employees from private holdings is about 30 per cent of total household income from private holdings [38.2 ÷ (85.2 + 38.2) billion rubles. Physical output data show that the share of production by individual peasants and by workers

and employees in gross output by the private sector was: meat, 28.3 per cent; milk, 32.8 per cent; eggs, 35.4 per cent; wool, 24.6 per cent (S. kh. 1960, pp. 334-336).

Household incomes in 1965

The Seven Year Plan calls for a 40 per cent increase in real income per collective farm worker. Does "income" here include transfer payments and the value of social services received by collective farmers? In Aganbegian's estimates above, these incomes are unambiguously included; the official statistical handbooks appear to show the contrary (see S. kh. 1960, pp. 479-480, and N. kh. 1959, p. 84). On the authority of the statistical handbooks, it is assumed that the Plan goal does not embrace transfer payments and value of social services received. It is assumed further, in line with evidence introduced earlier, that income from private holdings in the collective farms is to increase more rapidly than the corresponding private-holdings income of workers and employees and individual peasants.

Given the over-all increase in total real collective farm household income of 26 per cent, the increase in collective farm household income from private holdings can be no larger than roughly 20 per cent if the increase in aggregate real income is to come chiefly from the collective economy. Assuming an increase in total real private sector income of 12 per cent (that is, in proportion to the increase in real private gross output), the growth of collective farmer real income from private holdings could not be lower than, say, 15 per cent. Thus, the structure of collective farmer real income in 1965 (in terms of 1958 prices) would be as follows:

	Billion rubles	
	1958	1965
(i) Income from private holdings	85.2	98.0 - 102.2
(ii) Income from collective economy	89.8	118.3 - 122.5*
	175.0	220.5

*Residual, subtracting row (i) from total.

The midpoints of these ranges, 100 and 120 billion rubles, are used as estimates of 1965 collective farm household incomes from private holdings and from the collective farm, respectively. Since the increase in total private sector incomes is assumed to be 12 per cent (in real terms), the breakdown of private sector incomes in 1958 prices appears as follows:

		Billion rubles		Per cent
		1958	1965	increase
(i)	Collective farm households	85.2	100.0	17.5
(ii)	Workers and employees and individual peasants	38.2	38.2*	0
		123.4	138.2	12.0

*Residual, subtracting row (i) from total.

To arrive at a complete estimate of 1965 incomes of collective farmers, individual peasants, and workers and employees from private holdings, two additional assumptions are made: (a) the general price level for agricultural output will remain roughly unchanged through 1959-1965; and (b) the share of cash payments to members in total collective farm distributions will remain unchanged at the 1958 level, 57.8 per cent.

As to the first assumption, the Seven Year Plan refers only indirectly to agricultural price changes and then only to price decreases. Demanding economy in resource use from collective and state farms, the Plan declares: "It is on this basis that we shall insure a steady decline in prices of agricultural production and continued improvement of the welfare of the people." Comments in Soviet sources on this aspect of the Plan have not been much more explicit. Recalling suggestions for price reductions on certain commodities made by some central Asian party leaders at the December

1959 Party Central Committee Plenum, Aganbegian (op. cit., p. 116) concludes: "In the future, particularly considering the accelerated growth of labor productivity and the significant decline of the average cost of collective farm output, revisions of agricultural prices will be carried out on a wider scale."

However, if there are to be price decreases during the Seven Year Plan period, it is likely that they will be limited to technical crops (which figure neither in the in-kind distributions of the collective farms nor in the production of the private sector). Thus, 1958 procurement prices for grain, potatoes, and vegetables appear to be only slightly higher than average costs of producing these staples on collective farms. In contrast, the prices of sugar beets, cotton, and flax (and perhaps wool) exceeded production costs by 50 per cent or more. For these reasons, I doubt that the 10 per cent procurement price increase for potatoes in 1959 (S. G. Stoliarov, O tsenakh i tsenoobrazovanii v SSSR, 1960, p. 25) presages a general increase in prices of food crops. On the other hand, prices of livestock products "are below even state farm costs" (Nimitz, "Soviet Agricultural Prices and Costs," Table 14, p. 269). It is not inconceivable that price increases were contemplated for livestock products, to be instituted later in the Plan period in order to allow for some further decline in costs. While it would not be surprising that no mention is made in Soviet sources of impending price increases, it would be unjustified here to assume without additional evidence that such a significant change was incorporated in the Plan.

Given the estimates of farm income developed above, one may feel confident that assumption of an unchanged ratio of cash to total collective

farm distributions provides the minimum estimate of such cash payments in 1965. For it is clear from Soviet discussion that in-kind payment for labor days is on the way out (as is, indeed, the system of labor-day calculation of earnings). Unfortunately, there is no evidence with regard to the pace at which money payments are to displace those in kind. Constancy of the relation between the two is assumed here because the resulting estimate is best reconciled with the calculation of collective farm money income and its distribution in 1965 (see Appendix C, item 1.A). Moreover, it can be argued that it would have been convenient for Soviet planners, too, to assume constancy of the ratio of cash to total distributions. A shift from in-kind to cash distributions could well result in an equivalent increase in collective farm sales on the rural collective farm market, sales to households of products which had formerly been distributed in-kind as payment for labor. Thus, the effect of underestimating the rate of growth of cash payments relative to those in-kind would be inconsequential from the point of view of the planner's main problem, estimating flows between the collective farm and state sectors.

The structure of 1958 and 1965 household incomes in current prices can now be set out as follows:

		Billion rubles	
		1958	1965
(i)	Incomes from the collective economy of the collective farms;		
	a. Payments in cash	51.9	70.0
	b. Payments in kind	37.9	50.0
	c. Total	89.8	120.0
(ii)	Incomes of collective farmers from private holdings	85.2	100.0
(iii)	Other private sector incomes	38.2	38.2
	Total	213.2	258.2

The final step in this laborious calculation involves splitting up the sum of items (i) b, (ii), and (iii) above (that is, all incomes less collective farm payments in cash) into that part consumed and invested in kind and the part marketed, either to state and cooperative agencies or on the collective farm market. Here we have nothing to go by but intuition, and I shall assume that the trend of the recent past, a tendency of peasant households to retain relatively more and to market relatively less of the disposable output, is expected to operate in the period 1959-1965. In 1958, income in-kind composed two-thirds of total peasant-household incomes less collective farm money distributions (107.3 ÷ 161.3 billion rubles--SNIP 1956-1958, Table 1, Part A, item 1.e divided by sum of items 1.d and 1.e). I assume that by 1965 this relation will be raised to about 70 per cent: proceeds from household sales in 1965 are estimated as the same as in 1958, 54 billion rubles, and income in-kind as 134.2 billions, compared with 107.3 billions in 1958. Investment in-kind is estimated as increasing proportionately, from 1.3 to 1.6 billion rubles; consumption in-kind, as a residual, increases from 106.0 to 132.6 billion rubles.

2. Wages and salaries, farm and nonfarm

A. Money wages of workers and emplcyees. The Seven Year Plan target for the number of workers and employees in 1965 is 66.5 million. According to an English language broadcast of Radio Moscow on November 14, 1958, the monthly average wage of workers and employees in 1965 was planned to be 990 rubles or 26 per cent more than in 1958. Hence, the workers and employees wage bill in 1965 was planned to be 790.0 billion rubles (990 rubles per month x 12 x 66.5 million employed).

References to the goal of a 26 per cent increase in average wages appear frequently in Soviet sources. The 1965 absolute average wage has not since been repeated, as far as is known. However, the implied 1958 wage, 9399-9466 rubles per year (allowing for rounding of the percentage increase), is within one per cent of the 9355 rubles independently estimated by Nancy Nimitz (SNIP 1956-1958, Appendix Table A-4).

B. Other wages and salaries. There is no information upon which an estimate of this income component could be based. It is assumed arbitrarily that the 1965 level will be one-fifth higher than that of 1958, compared with an increase of 55 per cent in the worker and employee wage bill. Evidence is adduced in SNIP 1956-1958 showing that the comprehensive wage bill, which includes this and other minor income categories, grew less rapidly in the 1950's than its major component, the worker and employee wage bill (SNIP 1956-1958, Notes to Table 1, Part A, item A.2.c).

The 1958 proportions of money wages and wages in-kind in the total are assumed unchanged in 1965:

	Billion rubles	
	1958	1965
Other money wages and salaries	25.0	30.0
Wages in-kind	5.0	6.0
	30.0	36.0

3. Earnings of cooperative artisans

The figure 10 billion rubles is a guess which allows for no change in the number of members but for an increase in average earnings somewhat less than the planned increase in the average wage of workers and employees. In 1960 the industrial cooperatives were absorbed into state industry (1960 plan fulfillment report in Pravda, 26 January 1961). It is assumed here that the absorption of the industrial cooperatives was not part of the original Seven Year Plan directives.

4. Incomes of armed forces

The 1965 figures are guesses reflecting an average of the alternative assumptions of changes in force levels and average compensation:

	1958	1965
Size of armed forces, millions	3.8	2.4 - 3.8
Average pay per man, rubles per year	6900	6900-8625
Total pay, billion rubles	26.2	16.6-32.8
Average subsistence allowance per man, rubles	4000	4000-5000
Total subsistence, billion rubles	15.2	9.6-19.0
Total pay and subsistence, billion rubles	41.4	26.2-51.8

The size of the armed forces is assumed, at one extreme, to remain unchanged through 1965 and, at the other end of the range, to decline to a level no lower than that projected for 1961-1962 by Khrushchev in his January 1960 demobilization address (Pravda, 15 January 1960). It is assumed, in other words, that if demobilization was contemplated when drawing up the Plan, the reduction in force level planned was no more drastic than that announced by Khrushchev. The maximum average pay and subsistence figures represent 25 per cent increases compared with 1958, or about the planned increase in the average wage of workers and employees.

5. Other money incomes currently earned

These are assumed to increase in proportion to the growth of the workers and employees wage bill (item 2.A above). Incomes included here are bonuses not included in the wage bill, travel allowances, receipts from sales of handicraft articles, and incomes from services performed by households.

6. Imputed net rent

See Appendix B, item 2.A.

8. Total incomes currently earned

Sum of items 1-6.

9. Transfer receipts

This is the sum of 10.2 billion rubles of stipends (see Appendix D, item 1.B), 5.2 billion rubles of interest payments (estimated as increasing in proportion to net savings, 117 per cent more than in 1958--Appendix B, item 7) and 150 billion rubles of pensions and allowances. The latter figure was estimated on the basis of the Plan goal for an increase of 67 per cent in expenditures on certain social services and transfer payments, the so-called vyplaty i l'goty received by households. These expenditures cover pensions, stipends, insurance payments, grants-in-aid, free education and medical care, paid or reduced-price vacations in sanatoria and rest homes, etc., (N. kh. 1960, p. 874). In the absence of other information, pensions and allowances alone are assumed to increase in proportion.

10. Total incomes

Sum of items 8 and 9.

Appendix B

NOTES TO TABLE B

1958

From SNIP 1956-1958, Table 1, Part B.

1965

1. Retail sales of goods for consumption

A. State and cooperative trade network. Obtained through the following calculation (billion rubles):

Retail sales, not including commission trade	1030.0
Less	
Services	6.0
Sales to institutions	72.1
Producers goods sold to farm households	3.4
Building materials sold to households for construction	7.0
Equals	
Retail sales of goods to households for consumption	941.5

Retail sales, not including commission trade. N. kh. 1958, p. 103.

Services. The services included in the official retail sales series--manufacture of shoes and clothing from customers' material and repair of shoes, clothing and household goods--have been estimated as 2.5 billion rubles in 1956, 2.8 in 1957, and 3.1 billions in 1958 (SNIP 1956-1958, Notes to Table 1, Part B, item B.1.a). At the implied average rate of growth of 11.4 per cent, these services would total 6.6 billion rubles in 1965. Projected in proportion to the planned seven-year increase in retail trade, 62 per cent, their value would be

only 5.0 billion rubles. On the other hand, growth of a more comprehensive service aggregate--embracing, in addition, services performed by barber shops, laundries, and cleaning shops--was planned to be considerably faster (Pravda, 13 March 1959, p. 2):

	Billion rubles	Annual per cent increase
1958	6.2	..
1959 plan	7.2	16.1
1960 plan	8.6	19.4
1961 plan	10.3	19.8

It seems reasonable to suppose that small-scale manufacture of shoes and clothing from customers' material will continue to be displaced by large scale, factory output. It is more or less arbitrarily assumed that expansion of barber shops, laundries, and cleaning shops is planned to be more rapid than growth of the repair services. On this reasoning, an average annual rate of growth of the services included in the official retail trade statistics of 10 per cent is assumed, yielding an estimate for 1965 of 6.0 billion rubles.

Sales to institutions. Estimated as 7 per cent of retail sales, excluding commission sales. Recent official data covering the fourth quarter 1959 through the third quarter 1960 show actual sales to institutions as averaging 6.8 per cent of retail sales (Vestnik statistiki, 1961, No. 6, p. 94).

Producers' goods sold to farm households. Assumed to increase from the 1958 level of 3 billion rubles in proportion to the increase in gross agricultural output of the private sector, 12 per cent (see Appendix A, item 1).

Building materials sold to households. Assumed to increase from the 1958 level in proportion to the increase in private housing construction as follows:

	Urban	Rural	Total
Building materials sold to households in 1958 (SNIP 1956-1958, Notes to Table 1, Part B, item B.1.A), billion rubles	4.6	1.1	5.7
Increase in private housing construction, 1965 versus 1958 (below, Appendix E, item 1.C), per cent	20	40	
Sales of building materials to households in 1965, billion rubles	5.5	1.5	7.0

B. Urban collective farm market. Obtained as follows (billion rubles):

Urban collective farm market sales	31.0
Commission sales (including commission)	13.2
Total market sales	44.2
Less	
Sales to institutions	4.4
Equals	
Market sales to households	39.8

Urban collective farm market sales. This is the sum of 5.0 billion rubles of sales by collective farms and 32.4 billion rubles by households.

Proceeds from market sales by collective farms exclusive of commission sales remained at about the level of four billion rubles in 1956-1958 (SNIP 1956-1958, Appendix Table A-1). These sales by collective farms are arbitrarily assumed as five billion rubles in 1965.

Net income of households in 1965 from all sales, including those to procurement agencies, was estimated at 54 billion rubles (Notes to Table A, item 1). Based partly on the pattern of 1956-1958 (SNIP 1956-1958, Appendix Table A-1), the distribution of 1965 household sales is assumed as 40 per cent to procurement agencies, 55 per cent urban collective farm market and 5 per cent commission sales. (Rural collective farm sales are ignored owing to complete absence of data.) Hence, net proceeds from household sales on the urban collective farm market in 1965 are estimated as 29.7 billion rubles. To this must be added a proportionate share of total farm household production expenses to obtain gross income from collective farm market sales. (Market fees and taxes are of negligible size and are here ignored.) Total production expenses are estimated as increasing in proportion to the increase in gross output of the private sector, 12 per cent, or from 9.6 billions in 1958 to 10.8 billion rubles in 1965. Since the value of income from private sector output in 1965 was estimated as 138.2 billion rubles, the share of production expenses to be charged off against sales on the collective farm market is 21.5 per cent (29.7 + 138.2), or 2.3 billion rubles. Thus, sales by households on the urban collective farm market in 1965 are estimated to gross 31.0 billion rubles.

Commission sales. This is the sum of 3.2 billion rubles of sales by households and 10.0 billion rubles by collective farms.

Net proceeds received by households from commission sales in 1965 have been assumed as 5 per cent of household net income from sales in that year, or 2.7 billion rubles. The share of total production expenses in 1965, 10.8 billion rubles, to be charged off to commission sales

is 2.0 per cent (2.7 billion rubles of net proceeds from commission sales divided by 138.2 billion rubles of net income from all private sector output). To the resultant figure of 2.9 billion rubles of gross proceeds from commission sales must be added an allowance for the commissions of the consumer cooperatives. The total commission in 1956-1959 appears to have been about 10 per cent of the proceeds received by households and collective farms (N. kh. 1959, p. 708). Hence, the value of commission sales in 1965 from household output is estimated at 3.2 billion rubles.

The value of all commission sales by households and collective farms was as follows in 1954-1960 (N. kh. 1958, pp. 699, 740-741; N. kh. 1959, p. 629; Pravda, 26 January 1961, p. 2):

	Billion rubles	Annual per cent increase
1954	2.2	
1955	4.9	122.7
1956	6.6	34.7
1957	7.7	16.7
1958	8.7	13.0
1959	8.7	0
1960	7.5	(-) 13.8

In view of the predominance of the collective farms in commission sales (SNIP 1956-1958, Appendix Table A-1), I assume, for simplification, that the above growth pattern also characterizes the sales by collective farms alone, although such an assumption probably understates the annual increases in their sales during 1954-1959. In any event, in view of this record, it does not appear likely that sales will increase in the future at anything like the rates of 1956-1958. Whether such a reduction in the tempo of sales growth was part of the original Seven Year Plan is a moot point on which no evidence is presently available. Necessarily, then, the

1965 estimate is an arbitrary one. A 1965 level of sales by collective farms of ten billion rubles is assumed.

Institutional sales. Assumed to account for 10 per cent of total market sales. Institutional sales in the year fourth quarter 1959 to third quarter 1960 totalled 4.6 billion rubles (Vestnik statistiki, 1961, No. 10, p. 63), while total market sales were 47.0 billion in 1959 and 43.5 billion rubles in 1960 (N. kh. 1960, pp. 673, 736).

2. Consumer services

A. Housing (including imputed rent). Obtained as the sum of the following components (billion rubles):

Rent on all urban housing		13.5
Rent on state housing	9.0	
Imputed rent on private housing	4.5	
Imputed rent on private rural housing		6.7
Total		20.2

Rent on all urban housing. Obtained as the product of a rental rate of 15.84 rubles per square meter of living space, the average yearly rental on state housing which has remained in force over a long period (SNIP 1956-1958, Notes to Table 1, Part B, item B.2.a, and SNIP 1949-1955, pp. 98-99), and an estimated stock of urban housing in 1965, both private and state-owned, of 850 million square meters of living space.

The stock estimate was obtained as follows: At the end of 1958, the urban housing stock, private and state-owned, totalled 781 million square meters of floor space (N. kh. 1958, p. 641: the capital census of January 1, 1960 resulted in a revised official estimate of the size of the housing stock--N. kh. 1960, p. 613, but the Seven Year Plan housing goals

were drafted on the basis of estimates reflected in N. kh. 1958). The Seven Year Plan calls for new urban construction in 1959-1965 in the amount of 650-660 million square meters of floor space and for a 60 per cent increase in the urban housing stock. Thus, the stock at the end of 1965 was planned to reach 1250 million square meters of floor space. Adapting the midpoint of the range for planned new construction, expected retirements in this period, by implication, come to 186 million square meters (781 + 655 - 1250), or an annual average for the seven years of 26.6 million square meters of floor space.

New construction in 1965 was planned to be 96 million square meters of floor space (D. L. Broner, Sovremennye problemy zhilishchnogo khoziaistva, 1961, p. 98). Assuming retirements in that year as 26 million square meters, the stock at the end of 1964 would be 1180 million and the average annual stock in 1965 would be 1215 million square meters. This is equivalent to 850 million square meters of living space (the ratio of living to floor space is 0.7--ibid., pp. 91, 99).

Rent on urban state and imputed rent on urban private housing. The total rent on urban housing, 13.5 billion rubles, was distributed between that on state housing and the imputed rent on private housing in the proportions 2:1. This proportion approximately characterized the distribution of both the urban housing stock at the end of 1958 (as viewed then--N. kh. 1958, p. 641) and the volume of planned new construction in 1959-1965 (Broner, op. cit., p. 98). By implication, it is assumed that the ratio of retirements to new construction is to be the same for private and state urban housing.

Imputed rent, private rural housing. Obtained as the product of a rental rate of 15.84 rubles per square meter of living space--(that is, the average rental on state housing) and an estimated stock of private rural housing in 1965 of 425 million square meters of living space.

The stock estimate was obtained as follows: According to Strumilin, the stock of rural housing in 1959 totalled about 430 million square meters (Oktiabr', 1960, No. 3, translated in Current Digest of Soviet Press, XII:15, 11 May 1960, p. 12). Although Strumilin does not go into details, from the context of his remarks, it can be assumed that this figure refers to total floor space at the end of 1958 and excludes housing owned by state employed agricultural labor (the latter category is now included with urban housing in official statistics). The Seven Year Plan provides for new construction of seven million dwellings in rural areas in 1959-1965. Further, the average dwelling size is assumed to be 30 square meters: the average size of private urban dwellings is estimated as 30-40 square meters in Appendix E, item 1.C, and private housing constructed on state farms in 1954-1958 averaged 30 square meters (Ekonomika sel'skogo khoziaistva, 1960, No. 10, p. 4). Therefore, planned new construction in 1959-1965 is equivalent to 210 million square meters of floor space.

Since the Plan does not mention the planned increase in the stock of rural housing, it is not possible to estimate expected retirements by the method used for urban housing. For the decade 1949-1958, a rate of retirements approximately equal to, if not higher than, annual new construction may be inferred from a comparison of the stock at the end of 1958 with an estimate by Bergson and Heymann (SNIP 1940-1948,

p. 132) of the stock in 1948. The Bergson-Heymann estimate was 382 million square meters of living space, equivalent, on the assumption that the ratio of living to floor space in rural housing is 0.85 (SNIP 1956-1958, Notes to Table 1, Part A, item B.2.a), to 450 million square meters of floor space.

It seems doubtful that the Seven Year Plan contemplated a decrease or even no net increase in the rural housing stock, although, from all accounts, the quality of existing rural housing is so low as to necessitate rapid replacement. On the other hand, since the Plan clearly points to a decline in the collective farm population, the ratio of new housing constructed to old housing retired need not be nearly as high as that implied for urban housing in 1959-1965, 3.5 (see above, notes to rent on urban housing). Lacking additional information, it is arbitrarily assumed here that retirements of rural housing in 1959-1965 will be half as large as new construction, or 105 million square meters of floor space. Therefore, the rural housing stock at the end of 1965 is estimated as 535 million square meters of floor space. New construction in 1965 is estimated as one million dwellings (see below, Appendix E, item 1.C) or 30 million square meters. Assuming retirements in 1965 as 15 million square meters, the implied stock at the end of 1964 is 520 million and the average annual stock in 1965 is 528 million square meters of floor space. The ratio of living to floor space will probably be somewhat lower in the new construction, closer to 0.8. Therefore, in terms of living space, the average 1965 stock is estimated as 425 million square meters.

B. Trade union and other dues. This is the sum of two components (billion rubles):

Trade union dues	7.4
Other dues	4.6
	12.0

Trade union dues. Assumed to increase from the 1958 level of 4.8 billion rubles in proportion to the increase in the wage bill of workers and employers, 55 per cent (Table A, item 2.A). Dues are levied at one per cent of wages (SNIP 1956-1958, Notes to Table 1, Part B, item B.2.c).

Other dues. An arbitrary 25 per cent increase of the 1958 figure of 3.7 billion rubles.

C. Other services. The household sector income and outlay accounts for 1965 are balanced by estimating "other services" and "net savings" as a residual, deducting the sum of all other outlays from total household outlays, which are identically equal to total household incomes. As a residual, the sum of these two outlay components also includes any errors or omissions--that is, the statistical discrepancy between the household income and outlay accounts.

This procedure is necessitated by the absence of any information on which to base independent estimates. It may also be justified on the ground that much of what is considered a residual here is indeed a residual claimant in the Soviet consumer's family budget and that outlays on "other services" and savings in Soviet conditions are relatively close substitutes. "Other services" covers household outlays on a variety of services performed by the public sector and by households (SNIP 1956-1958, Notes to Table 1, Part B, item B.2.d): heat, light, water; transportation and communications; rest homes and children's services; baths, laundries,

barbershops; manufacture of shoes and clothing from customer's material; repair of clothing and household goods; domestic service; private professional practice--medical, dental, law, teaching. Even over a considerable period of time and for an increase in total incomes as high as two-fifths, demand for some of these services is undoubtedly inelastic: one thinks not only of outlays on utilities and barber services but possibly even of expenditure on nursery school services, whose fees vary proportionately to earnings of parents only up to a moderate maximum wage. Conceivably, demand for services of municipal baths is very inelastic. On the other hand, in Soviet conditions, the income elasticity of demand for transportation, rest homes, domestic and private professional services, may be quite high. To a considerable degree, outlays of this kind can also be regarded as competitive with savings, since the latter are intended not only for purchase of consumer durables but also for some of the services enumerated above.

In order to compute transfer receipts of the public sector (Table C, item 8), and the national product accounts, Tables E and F, it is necessary to distribute the total residual between "other services" and "net savings." In the estimates of SNIP 1956-1958 (Table 1, Part B), the share of "other services" in the sum of these outlays and "net savings" rose sharply from 60 per cent in 1956 to 86 per cent in 1958. To a considerable extent, the abrupt decline in the share of "net savings" is connected with abrogation of compulsory loan subscriptions in 1958. Since it is highly improbable that these will be resumed, it is unlikely that savings are expected to increase at such a rate as to re-establish the

proportions of 1956-1957. Indeed, it would seem more likely that expenditures on "other services" are expected to increase faster than "net savings." Somewhat arbitrarily, "net savings" in 1965 are estimated as 25 billion rubles, or 16 per cent, and "other services" as 84 per cent, or 129.9 billion rubles, of the total residual of 154.9 billion rubles.

3. Consumption of income in kind

A. Farm income in kind. Appendix A, item 1.

B. Nonfarm wages in kind. Appendix A, item 2.B.

C. Military subsistence. Table A.

4. Total outlays for consumption

Sum of items 1-3.

5. Investment

A. Outlays on building materials. Represents the sum of estimated purchases in retail trade, 7.0 billion rubles (see above, Appendix B, item 1.A), plus 2.7 billion rubles of purchases from collective farms and enterprises. As in SNIP 1956-1958 (Notes to Table 1, Part B, item B.5.a), it is assumed that purchases from farms and enterprises are one-third as large as purchases in retail trade.

B. Outlays on building services. Estimated as increasing in proportion to the increase in private housing construction, one-third (Table G).

C. Farm investment in kind. Appendix A, item 1.

6. Total outlays for consumption and investment

Sum of items 4 and 5.

7. Net savings

Appendix B, item 2.C.

8. Direct taxes

This is the sum of these component estimates (billion rubles):

Tax on collective farmers	5
Local taxes and fees	3
Income taxes, workers and employees	25

In his speech proclaiming the gradual abrogation of direct taxes (Pravda, 6 May 1960), Khrushchev indicated that the tax on collective farmers would remain in effect indefinitely and that the yield in 1959 (?) was 4 billion rubles. Given a projected increase above the 1958 level of 12 per cent in incomes of households from the private agricultural economy (Appendix A, item 1), and the fact that 1959 was a year of mediocre harvest, the 1965 tax yield is estimated as about 5 billions.

Local taxes and fees from households in 1958 have been estimated as 5.8 billion rubles (SNIP 1956-1958, Appendix Table C-6), but data supplied by Khrushchev indicate that the yield in 1960 was planned to be only about 2 billion rubles: according to Khrushchev, planned 1960 revenue from state and local taxes was 59 billion rubles (loc. cit.), while the planned proceeds from state income taxes alone was 57.2 billions (Planovoe khoziaistvo, 1959, No. 12, p. 6). My 1965 estimate is a more or less arbitrary extrapolation.

The estimate for income taxes was derived from data on the projected income tax as given in Khrushchev's tax speech and the text of the follow-up Supreme Soviet decree (Pravda, May 8, 1960). For the following categories of workers and employees, whose taxes were to remain unchanged until October 1965, we are given this information:

Workers and employees with base income of rubles per month	With abolition of income taxes after 10/1/65 earnings would increase by		Tax proceeds, calculated billion rubles (3)	Paid in first nine months of 1965 billion rubles (4)
	% of tax (1)	billion rubles (2)		
1001 - 1200	79	6.5	8.2	6.2
1201 - 1400	46	2.6	5.7	4.3
1401 - 1600	29	0.9	3.1	2.3
1601 - 1800	15	0.2	1.3	1.0
1801 - 2000 max.	10	0.2	4.0	3.0
Total, groups listed		10.4	22.3	16.8

The data in columns 1 and 2 were supplied in the sources above; column 3 was computed by dividing the entries in column 2 by those in column 1. For the group with income 1801 - 2000 rubles, it was assumed that earnings would increase by an average 5 per cent of the tax. Column 4 was computed by multiplying the entries in column 3 by 0.75.

Thus, workers and employees earning between 1000 and 2000 rubles would pay an estimated 16.8 billion rubles of income taxes in 1965. In addition, workers and employees earning between 700 and 1000 rubles, whose income tax rates were to be cut before 1965, would still be paying some taxes in that year, as would those earning more than 2000 rubles. To account for taxes from these categories of workers and employees, an additional 8 billion rubles is added to the total in column 4 above.

9. Total outlays.

Equal to total incomes, Table C, item 10.

Appendix C

NOTES TO TABLE C

1958

From SNIP 1956-1958, Table 1, Part C, except that an estimated 9.0 billion rubles of depreciation allowances have been deducted from retained income of collective farms (item 1.A) and included with depreciation (item 6). See immediately below.

1. Net income retained by economic organizations

A. Retained income of collective farms. The figure for 1965 represents total retained income, 77 billion rubles, less 19 billion rubles of depreciation allowances.

Estimation of retained income in 1965 begins with the calculation of the total money income of collective farms in that year. The first step in this process is the computation of collective farm income from sales of farm products to state and cooperative agencies. Appendix Table C-1 sets out a calculation of collective farm income from sales of eleven major farm products to state agencies. Proceeds from these sales as calculated amount to about 165 billion rubles at 1958 prices. In 1958 proceeds from sales of these products accounted for 104.2 billion rubles (deliveries data from S. kh. 1960, multiplied by prices in A. G. Zverev, Natsional'nyi dokhod i finansy SSSR, 1961, p. 306) and represented 96 per cent of collective farm income from all sales to state and cooperative agencies (S. kh. 1960, p. 64). If this relation carries over to 1965, collective farm income in that year from sales to state and cooperative agencies would be 172 billion rubles. Sales on the collective farm market, urban and rural, yielded 15.5 billion rubles in 1958, while all other money income was 8.0 billion rubles. Income

Appendix Table C-1

ESTIMATION OF COLLECTIVE FARM MONEY INCOME IN 1965 FROM SALES TO STATE OF ELEVEN MAJOR FARM PRODUCTS

Product	State procurement in 1965, million tons: From all sources (1)	From state farms (2)	From collective farms (3)	Prices of collective farm deliveries, rubles per ton (4)	Value of collective farm deliveries, billion rubles (5)
Grain	50-52	20-21	30-31	740	22.2-22.9
Oil seed	3.92		3.45	1,480	5.1
Potatoes	11.72		9.20	420	3.9
Vegetables	8		4.80	780	3.7
Sugar beets	81.00	5.00	76.00	230	17.5
Unginned cotton	5.70-6.10		4.90-5.25	3,370	16.5-17.7
Flax fiber	0.53		0.52	16,640	8.7
Meat, live weight	11.05	3.54	6.43	6,000	38.6
Milk	40.61	10.56	27.51	1,130	31.1
Wool	0.54	0.18	0.32	37,610	12.0
Eggs[a]	10.00		5.70	617	3.5
Eleven products					162.8-164.7

Note:

[a] Quantities in billion units, prices in rubles per thousand.

Sources:

Column (1). Given directly in the approved Plan, except for grain and vegetables. The target for grain is stated as somewhat higher than planned 1958 procurement, 49 million tons. The latter figure is an estimate based on planned deliveries from the RSFSR, Kazakhstan and the Ukraine, 48.6 million tons (Izvestiia, 6 November 1958), and actual deliveries of the other republics of 1.0 million tons (S. kh. 1960, p. 95). The target for vegetables is a crude estimate, representing a 90 per cent increase from the 1958 level (S. kh. 1960, p. 90).

Column (2). Except for sugar beets, entries in column (2) are obtained as the product of column (1) figures and shares of state farms in total deliveries to the state in 1965 given in Pravda, 16 December 1958. The same source also states that state farm deliveries of sugar beets are to be more than four times greater in 1965 than in 1957. State procurement of sugar beets from state farms came to 1.2 million tons in 1957 (total procurements less those from collective farms, as shown in S. kh. 1960, pp. 61, 90; sugar beets are not produced in the private sector--see ibid., pp. 202-207).

Column (3). Grain and sugar beets: figures are the difference between columns (1) and (2). Oil seed: collective farm share in 1965 assumed the same as collective farm share of total sunflower seed deliveries in 1958, 88 per cent. Potatoes and vegetables: private sector deliveries assumed to increase by 10 per cent, state farm deliveries by 150 per cent, and collective farm deliveries obtained as residual. Cotton and flax: collective farm shares in 1965 assumed the same as in 1958, 86 and 99 per cent, respectively. Meat, milk, and wool: private sector deliveries assumed to increase by 10 per cent and collective farm deliveries obtained as a residual. Eggs: private sector deliveries assumed to increase by 10 per cent, state farm deliveries by 100 per cent and collective farm deliveries obtained as residual. Deliveries for all products in 1958 taken from S. kh. 1960, pp. 61, 90, 102, 104, 106, 108, 110, 112.

Column (4). All prices except for grain from A. G. Zverev, Natsional'nyi dokhod i finansy SSSR, 1961, p. 306. Grain price from Nimitz, "Soviet Agricultural Prices and Costs," Table 14, p. 269.

Column (5). Column (3) times column (4).

from sales on the collective farm market in 1965 is assumed to be 10-40 per cent greater than in 1958 (the calculated increase for deliveries to the state of eleven major products is 58 per cent), while income from other sources is arbitrarily assumed as 12 billion rubles. Thus, total collective farm incomes in 1965 are estimated as 201-206 billion rubles, 52-56 per cent greater than in 1958.

With considerably greater margin of uncertainty attaching to estimates of components, roughly the same total value can be built up as a minimum on the outlay side, as shown in the following tabulation (billions of rubles; 1958 data from SNIP 1956-1958, Appendix Table C-1):

	1958	1965
Insurance and fees	2.8	6
Administrative expenses	1.5	
Production expenses	31.2	45
Income tax	10.3	14 - 17
Additions to collective funds		
Investment fund	30.4	60 - 70
Cultural fund	2.0	3
Working capital fund	4.0	9
Payments to members	49.8	67 - 86
	132.0	203 - 236

The figures for insurance, fees, administrative and production expenses in 1965 assume an increase of roughly two-fifths over the 1958 level, as compared with a planned increase in gross output of 80 per cent. This implies, roughly, a drop of somewhat more than a fifth in costs per unit of gross output. In the light of the over-all ambitiousness of collective farm targets and the likelihood of an increase in the weight of double counting in gross output (animal feed is counted twice, once as a crop and again in the value of the livestock), such a decline might well have been programmed. Income taxes are calculated as 7 per cent of total

income (see Appendix Table C-3 below)--that is, from the equation $x = .07 (y + x)$, where y is the sum of all other outlays. The maximum value for additions to the investment fund assumes a constant annual rate of growth equal to that implied by the collective farm investment target in 1958 prices (Table G, item 1.B.(1)); the minimum value is an arbitrary adjustment. The estimate of additions to the cultural and working capital funds is arbitrary, except that Soviet discussion of inventory investment in collective farms suggest the possibility of (and need for) a substantial relative increase. Finally, the range of values for payments to members was obtained on the assumption that the share of cash payments in total distributions to members was planned to be no less than in 1958, 57.8 per cent, and no higher than 75 per cent. These percentages, multiplied by the value of total distributions, estimated as 120 billion rubles (Appendix A, item 1.A), and roughly adjusted for wage payments from investment funds, yielded the indicated values.

Thus, total incomes were estimated as 201-206 billion rubles, and total outlays as 203-236 billion rubles. Since the calculation of total incomes is clearly the more reliable, reconciliation of incomes and outlays should result in a total apparently no higher than 210 billion rubles. To fit within this total, payments to members are taken as 67 billion rubles and additions to the investment fund as 65 billion rubles. Hence, total retained income (additions to all collective funds) in 1965 is estimated as 77 billion rubles.

Depreciation allowances in collective farms are estimated as 9.0 billion rubles in 1958, and 19 billion rubles in 1965. According to G. Kotov (Ekonomika sel'skogo khoziaistva, 1960, No. 1, pp. 23, 25),

these allowances represented 29.4 per cent in 1955-1957 and 29.6 per cent in 1958 of deductions from money income for "indivisible funds" (investment fund). Additions to the investment fund in 1958 were 30.4 billion rubles (SNIP 1956-1958, Appendix Table C-1), and 29.6 per cent of that sum is 9.0 billion rubles. Depreciation allowances in 1965 are assumed to increase in proportion to additions to the investment fund, 114 per cent.

B. Retained profits of state enterprises and nonfarm cooperatives. This is the sum of 115 billion rubles of retained profits of state enterprises and 13 billion rubles of retained income of nonfarm cooperatives. Retained profits of state enterprises in 1965 are estimated as twice the 1958 level of 57 billion rubles. Assuming a constant annual rate of growth, the Seven Year Plan target of investment from noncentralized funds (this category of investment bears a close relation to retained profits) implies a 1965 level 110 per cent greater than that of 1958 (Table G, item 1.A.(1)(b)). Retained income of nonfarm cooperatives is estimated as increasing in proportion to the increase in the proceeds from the tax on their incomes (Appendix Table C-3, item B.2).

It is worth emphasizing that though these increases appear sizeable, there is evidence that they may understate the true planned growth. Appendix Table C-2 presents a crude but nevertheless instructive calculation of costs and profits of four economic sectors in 1958 and 1965, showing a planned 1965 level of 488-575 billion rubles, 3.1-3.6 times that of 1958. A similar increase may also be planned for state farms and sea and river transport: I have estimated that the target increase for state farm output is 150 per cent (see Appendix A, page 130), and we are told that the cost of the basic output of state farms is to decrease by 24 per cent (Planovoe

Appendix Table C-2

APPROXIMATE COSTS AND PROFITS OF FOUR SECTORS,
1958 AND 1965
(billion rubles)

	1958			1965		
	Output	Costs	Profits	Output	Costs	Profits
Industry	1000-1150	885-1000	115	1800-2070	1410-1593	477
Contract construction	132	122	10	211	183	28
Railroad freight transportation	59	43	16	82	47	35
Retail trade	62	44	18	100	65	35
Total profits, four sectors			159			488-575

Sources:

Industry

1958: Profits from SNIP 1956-1958, Appendix Table C-4. Output represents the value of sales. The range of output and costs figures was estimated as follows: Scattered data suggest that the average rate of profit in industry was in the neighborhood of 10 per cent. E.g., the rate of profit for sovnarkhoz industry (accounting for 71 per cent of total industrial output in 1958--N. kh. 1959, p. 135) was more than 10 per cent in heavy industry and about 7.5 per cent in light and food industry, according to N. S. Spiridonova, Khoziaistvennyi raschet v novykh usloviiakh upravleniia promyshlennost'iu, 1961, p. 475. There is considerable evidence that the profits underlying the frequently cited profit rates represent the difference between sales proceeds at wholesale enterprise prices (without turnover tax) and so-called "full cost" of sales and that the latter magnitude is the denominator of the ratio (see D. V. Savinskii, Kurs promyshlennoi statistiki, 1960, pp. 421-422; A. I. Petrov, ed., Kurs ekonomicheskoi statistiki, 1961, pp. 384-385; L. M. Volodarskii, Statistika i planirovanie promyshlennosti, 2nd edition, 1960, p. 295). This suggests total costs of 1150 billion rubles and total sales of 1265 billion rubles. However, the latter seems too high, for it is almost identical with the estimated value in 1955 prices of gross output in 1958, 1270 billion rubles. [This estimate is derived from the 1960 value of gross output given by Khrushchev (Pravda, 19 October 1961), 1550 billion rubles in 1955 wholesale

Appendix Table C-2 (continued)

prices net of turnover tax, carried back to 1958 on the basis of official indexes.] It seems clear that the value of sales could not have been higher than 1200 billion rubles, given the Soviet distinction between gross output and sales, and was probably lower. How much lower is not known: the range in the table is arbitrary.

1965: The Plan provides for an 80 per cent increase in industrial output and a decline of 11.5 per cent in costs per ruble of marketed output.

Construction

1958: Output is the value of construction-installation work by contract organizations in estimate prices from N. kh. 1959, p. 562. For present purposes it is assumed that the estimate prices are equivalent to 1958 actual prices. Profits are derived approximately from SNIP 1956-1958, Appendix Table C-4.

1965: The volume of construction is to increase 60 per cent by 1965 (Pravda, 27 June 1959) and the Control Figures call for a 6 per cent reduction in average cost in the seven-year period.

Railroad freight transportation

1958: Output represents freight turnover (1302 billion ton-km, N. kh. 1959, p. 487) multiplied by an average freight rate of 4.5 kopecks per ton-km. The average freight rate was computed on the basis of statements in (i) Voprosy ekonomiki, 1959, No. 8, p. 130, that cost represents on the average 73 per cent of the price of railroad freight transport and (ii), Planovoe khoziaistvo, 1959, No. 3, p. 19, showing average cost of a freight ton-km in 1958 as 3.3 kopecks.

1965: According to ibid., cost per freight ton-km is to be reduced to 2.6 kopecks in 1965. The 1965 goal for total freight turnover, the average of the range given in the Control Figures, is 1825 billion ton-km. Approximate confirmation of the increase in profits appears in a Soviet source claiming savings by 1965, from decreases in the cost of railroad shipments, of more than 15 billion rubles. E. F. Rudoi and T. I. Lazarenko, Razvitie transporta i aviatsii v SSSR 1959-1965, 1960, p. 73.

Retail trade

1958: Output represents trade markup (selling costs plus profit) in retail trade. Selling costs are taken from N. kh. 1959, p. 669. Profits from sales in retail trade were 17.1 billion rubles (ibid., p. 674), but it is clear from a comparison of selling costs in ibid., pp. 669 and 673, that the profits figure is somewhat less inclusive than the markup figure. The profits figure has therefore been raised 7 per cent to include the missing component.

1965: Retail trade is to increase 54 per cent in current prices (N. kh. 1958, p. 103) and I assume a 10 per cent decline in costs.

khoziaistvo, 1960, No. 2, p. 83). The Control Figures call for a doubling in maritime cargo transport operations and an increase of 60 per cent in inland water freight transport, while sea and river transport costs are also to decline by 24 per cent (E. F. Rudoi and T. I. Lazarenko, Razvitie transporta i aviatsii v SSSR 1959-1965, 1960, pp. 81, 91).

Total gross profits of all state enterprises and nonfarm cooperatives in 1958 came to 210.5 billion rubles (SNIP 1956-1958, Table 1, Part C, items 1.b-1.c, 3.b-3.c, plus 4.0 billion rubles of cash premiums to households and operating losses of enterprise housing from Notes to Table 1, Part C, item C.1.b). The crude calculation in Appendix Table C-2 accounts for 159 billions of the total 210.5. If the profits of the remaining sectors, amounting to fifty odd billion rubles, were planned to double only, total gross profits in 1965 would reach 590-675 billion rubles.

Appendix Table C-3 derives an estimate of deductions from state enterprise profits to the budget as a residual after deducting other budget revenues. The residual estimate of proceeds from the profits tax is 335-425 billion rubles. In 1958, the profits tax syphoned off 68.3 per cent of all state enterprise profits (SNIP 1956-1958, Appendix Table C-2). If this proportion were to remain unchanged, profits deductions of 335-425 billion rubles would imply total state enterprise profits in 1965 of 486-617 billion rubles. The latter result is noteworthy in two respects: (a) adding an allowance of 23 billion rubles of profits by nonfarm cooperatives (retained income plus income tax), the range of total gross profits of 509-640 billion rubles is not too far from the range of total gross profits calculated above on the basis of Appendix Table C-2, 590-675 billion rubles; (b) the implied level of state enterprise profits net of

Appendix Table C-3

STATE BUDGET REVENUES, 1958 AND 1965

	Billion rubles	
	1958	1965
Total revenues	672.3	1150
A. From households	68.3	58
1. Taxes	57.7	33
2. State loans	10.6	25
B. From enterprises and organizations	604.0	1092
1. Collective farm income tax	10.3	15
2. Nonfarm cooperative income tax	6.2	10
3. MTS-RTS incomes	9.7	3
4. Social insurance revenues	33.1	51
5. Customs revenues	14.0	20
6. Forest revenues	2.1	3
7. Incomes from local Soviet property, local taxes and fees, fees and other nontax revenues	46.0	100
8. Miscellaneous unidentified revenues	42.7	85
9. Turnover tax	304.5	380-470
10. Profits tax	135.4	335-425

Sources:

1958 SNIP 1956-1958, Appendix Table C-6.

1965 For total revenues see above, pp. 14-15. Components are estimated below.

A. Incomes from households. See Appendix B, items 7 and 8. In the absence of other information, state loan income is here identified with net savings. There are two reasons why this is probably a reasonable expedient: first, the two categories are intimately related, since the increment in savings bank deposits is largely transferred to the budget via purchases of bonds by the savings banks, as shown by the following data (N. kh. 1956, p. 282, and N. kh. 1959, pp. 800, 810):

Appendix Table C-3 (continued)

	Increment in savings bank deposits	Bonds purchased by savings banks
	(billion rubles)	
1956	10.0	10.0
1957	16.9	n.a.
1958	6.6	6.5
1959	13.4	13.3

Secondly, direct subscriptions by the population now account for a minor share of total bond purchases (N. kh. 1959, p. 800).

B. Incomes from enterprises and organizations. The total is a residual obtained by subtracting incomes from households from total budget incomes. In the explanations below, data for 1949-1954, unless otherwise indicated, are taken from SNIP 1949-1955, pp. 115, 117, 128, 130, corrected as required by data appearing on pp. 212-213 of that study; data for 1955-1958 are taken from SNIP 1956-1958, Appendix Table C-6.

1. Collective farm income tax. I assume that the effective income tax rate on collective farm money income will decline from the 1955-1958 level of roughly 8 per cent to about 7 per cent in 1965. On December 18, 1958, the tax rate was reduced to a flat 12.5 per cent on gross income net of essentially nonlabor payments (Pravda, 23 December 1958, and Vedomosti verkhovnogo soveta, 1 January 1959). Zverev, the then Minister of Finance, characterized this change as a reduction of the "existing [1958] tax rate... from 14 per cent to 12.5 per cent" (Pravda, 23 December 1958). My estimate of collective farm money income in 1965 is 210 billion rubles (see above, Appendix C, item 1.A).

2. Nonfarm cooperative income tax. The rate of growth of revenue from this source was 10.1 per cent in the decade 1949-1958 and 5.4 per cent in 1955-1958. My estimate assumes a rate of growth of about 7 per cent per year in 1959-1965.

3. MTS-RTS incomes. These incomes totalled almost 10 billion rubles in 1958 but declined to 1.8 billions in 1959. Although begun in 1958, the dissolution of the MTS was not completed in that year. Hence, it is necessary to use the 1959 figure, rather than those for previous years, as a rough guide to RTS incomes in 1965. The entry in the table is an arbitrary increase of the 1959 value.

4. Social insurance revenues. Estimated as increasing in proportion to the increase in the worker and employee wage bill, 55 per cent (Table A, item 2.A).

5. Customs revenues. The Control Figures call for a more than 50 per cent increase in Soviet trade with the Bloc, while in his speech on the Plan to the 21st Party Congress Khrushchev declared, "We can at least double the volume of our foreign trade." However, Soviet planners would not count on a proportional increase in customs revenues if they expected, as they seemed

Appendix Table C-3 (continued)

to, stability of the Soviet price level and price inflation abroad.

6. Forest revenues. These revenues have remained for a long period at a level of about two billion rubles.

7. Incomes from local Soviet property, local taxes and fees, fees and other nontax revenues. The rate of growth of these revenues was better than 12 per cent in 1949-1958 and 16.6 per cent in 1955-1958. My estimate assumes a rate of growth of about 12 per cent in 1959-1965.

8. Miscellaneous unidentified incomes. We know nothing of the nature of these revenue sources, but an arbitrary allowance of double the 1958 level, while total budget incomes are planned to increase by 78 per cent, would seem generous.

9. Turnover tax. In the 1950's, turnover tax revenues increased much less rapidly than the value of retail trade (in current prices), as shown in these data (N. kh. 1958, pp. 699, 708, 899):

	Per cent increase in	
	Retail trade*	Turnover tax revenues
1950-1953	19.8	3.2
1953-1955	15.4	(-) 0.5
1955-1958	34.5	25.6

*Excluding commission trade.

In large measure, especially with reference to the early 1950's, this pattern reflects the substantial retail price reductions effected primarily through decreases in the turnover tax. It seems safe to assume that the planned increase in turnover tax revenue could not be higher than the planned 54 per cent increase in retail trade in current prices (N. kh. 1958, p. 103). On the other hand, a change in the planned mix of retail trade sales with relatively more weight for commodities exempt from the tax (or taxed at a rate below the weighted average in 1958) would result in an increase of turnover tax revenue less than proportional to the increase in retail trade sales. The minimum planned increase in turnover tax proceeds is arbitrarily assumed to be 25 per cent.

10. Profits tax. Residual obtained by deducting the sum of all other revenues from total revenues.

profits tax, 151-192 billion rubles, is 2.5 to 3.1 times the 1958 level of 61 billion rubles (SNIP 1956-1958, Notes to Table 1, Part C, item C.1.b). Thus, the accepted estimate for retained profits of state enterprises, only twice the 1958 level, might well be an understatement.

2. Charges to economic enterprises for special funds

A. For social insurance budget. Assumed to increase over the 1958 level in proportion to the planned increase in the worker and employee wage bill, 54.6 per cent.

B. For training of workers, research. Expenditures remained relatively constant in 1956-1958 (SNIP 1956-1958, Table 1, Part C, item 2.b) at about five billion rubles. The estimate for 1965 is an arbitrary allowance for a small increase over the 1958 level.

3. Taxes and other payments to budget, including customs duties

This category consists of the part of state budget revenues from enterprises and organizations that is a charge on current account. In Appendix Table C-3, these revenues are estimated to total 1092 billion rubles in 1965. In 1956-1958 the following percentages of budget income from enterprises and organizations represented charges on current account, as estimated: 87.0, 86.6, 86.0 (from SNIP 1956-1958, Table 1, Part C, sum of items 3.f and 4 as per cent of budget revenues from the socialist economy in Appendix Table C-6). My estimate for 1965 is obtained by taking 85 per cent of 1092 billion rubles.

4. Allowances for subsidized losses

The estimate of subsidies in 1958 consists of 34 billion rubles for the accounting subsidy to procurement, representing the result of the lag in increase of prices received by procurement organizations behind the

rapid increase in prices paid by them for farm products; eight billion rubles for the accounting subsidy to foreign trade organizations incurring accounting losses due to the difference between domestic and foreign trade prices; and some two billion rubles to cover the operating losses of MTS/RTS organizations (SNIP 1956-1958, Notes to Table 1, Part C, item C.5). For 1965, I assume Soviet planners foresaw: no subsidies to RTS; a diminution of the gap between domestic and foreign trade (world market) prices; some decline in purchase prices of technical crops (see Appendix A, item 1) and stability of prices in sectors processing agricultural materials. On this basis, I am guessing that subsidies in 1965 were planned to be no larger than half the 1958 level.

5. Consolidated total charges against current product, net of depreciation

Sum of items 1-4.

6. Depreciation

This figure is the sum of an estimated 19 billion rubles of depreciation allowances by collective farms and 111 billion rubles of allowances in the rest of the public sector (Appendix E, item 3.A).

7. Consolidated total charges against current product

Sum of items 5 and 6.

8. Transfer receipts

This is the sum of 25.0 billion rubles of net household savings and 33.0 billion rubles of direct taxes (Table B, items 7 and 8).

9. Consolidated net income

Sum of items 7 and 8.

Appendix D

NOTES TO TABLE D

1958

From SNIP 1956-1958, Table 1, Part D, except items 1.B, 3, and 6. Estimates of these items are explained below.

1965

1. Communal services

A. Health care. Estimate obtained as follows (1958 data from SNIP 1956-1958, Appendix Table D-1):

	Billion rubles	
	1958	1965
Budget outlays on health and physical culture	41.2	65.0
Outlays from social insurance funds	2.9	3.5
Outlays by enterprises, collective farms, other organizations	6.2	18.6
Total outlays	50.3	87.1
Less		
Capital outlays	6.0	10.8
Equals		
Total operating outlays	44.3	76.3

Budget outlays. In his address to the 21st Party Congress, presenting the draft Seven Year Plan, Khrushchev made the following statement: "Total state outlays on the further improvement of health care of our country's population will reach almost 360 billion rubles during the seven-year period." Khrushchev's remark is difficult to interpret. Presumably the outlays referred to do not include those by enterprises, collective farms, and other organizations. But whether outlays from social insurance funds are included, or whether the planned expenditures are net

or gross of investment, is not clear. Assuming in each case a constant annual rate of increase of expenditures, the alternative estimates for 1965 which can be inferred from Khrushchev's statement are shown below. (Capital outlays are crudely estimated on the assumption that the relative distribution of total capital outlays by source is the same as the distribution of total gross outlays.)

	Billion rubles	
	1958	1965
Budget outlays only		
Gross of investment	41.2	60
Net of investment	36.3	65
Budget and social insurance fund outlays		
Gross of investment	44.1	57
Net of investment	38.8	62

What are the 1965 outlay implications of other Plan goals for health care? The Control Figures provide for a seven-year (centralized?) investment outlay of 77 billion rubles in education, culture and health, or 79 per cent more than in 1952-1958. More than 25 billion rubles are to be invested in public health, social security, physical culture and sports and the medical industry, or 80 per cent more than was invested in these projects in 1952-1958. This investment is to result in increases in the number of hospital beds and nursery accommodations which are 100 per cent and 150 per cent, respectively, greater than the increases obtained in 1952-1958. The latter goal can be roughly translated into actual numbers of beds and accommodations as follows (N. kh. 1958, pp. 879, 890; nursery places in 1954 from N. kh. 1955, p. 248):

	Thousands of units	
	Hospital beds	Nursery accommodations
1950	1011	777
1954	not available	862
1955	1289	907
1958	1533	1135

By interpolation (assuming constant annual rates of increase), we may estimate the number of beds in 1951 as 1,061,000 and the number of nursery places in that year as 797,000. Hence, the increase between 1951 and 1958 came to 472,000 beds and 338,000 nursery places. The corresponding 1959-1965 increases are 100 and 150 per cent, respectively, or 944,000 beds and 507,000 nursery places. Therefore, the number of beds in 1965 is to be 62 per cent and the number of nursery places 45 per cent greater than in 1958.

The next step is to assess the relative importance of expenditures on these categories of health care. We do not have such data for outlays from all sources of finance; a breakdown of state budget outlays, roughly four-fifths or more of the total, is available for recent years through 1957 (Ministerstvo finansov SSSR, Raskhody na sotsial'no-kul'turnye meropriiatiia po gosudarstvennomu biudzhetu SSSR, 1958, hereafter referred to as Raskhody na sots. kul't., p. 61). This source indicates that in 1956-1957, outlays on hospitals and dispensaries accounted for about 60 per cent, and outlays on nurseries more than 8 per cent, of all state budget outlays on health care and physical culture (expenditures on physical culture are negligible). I assume that these proportions were the same in 1958 and that total operating outlays in 1959-1965 are to increase in proportion to the increase in the number of hospital beds and nursery places. Investment

is estimated to increase by 80 per cent and the level of capital outlays in 1958 is estimated from information for 1956-1957 in ibid., pp. 73, 76. We may then estimate the following breakdown of budget outlays on health care in 1958 and 1965 (billion rubles):

	1958	1965
Outlays on hospitals and dispensaries		
Capital outlays	2.0	3.6
Operating outlays	22.7	36.7
Total	24.7	40.3
Outlays on nursery schools		
Capital outlays	0.3	0.5
Operating outlays	3.2	4.6
Total	3.5	5.1
All outlays on hospitals, dispensaries and nursery schools		
Capital outlays	2.3	4.1
Operating outlays	25.9	41.3
Total	28.2	45.4
Other budget outlays on health care	13.0	?
Total budget outlays on health care	41.2	?

Thus, budget outlays on the subcategories identified would increase to 45.4 billion rubles from the 1958 level of 28.2 billions. If other budget outlays on health care were to increase by no more than 2 per cent a year, total budget outlays on health care in 1965 would reach about 60 billion rubles. This is the outlay level inferred from Khrushchev's statement cited earlier, on the assumption that he referred to budget outlays gross of investment. However, other budget outlays on health care have grown much more rapidly than the 2 per cent postulated here for the Seven Year Plan--almost 10 per cent per year in 1951-1957, sufficient almost to double the 1958 level of 13 billion rubles and to raise total

budget outlays to 70 billion rubles. More or less arbitrarily, the difference is split and 1965 total budget outlays estimated as 65 billion rubles.

Outlays from social insurance funds and Outlays by enterprises, collective farms and other organizations. Extrapolated from data for 1950-1958 in N. kh. 1958, pp. 904-906, and N. kh. 1959, pp. 804-806.

Capital outlays. Assumed to increase by 80 per cent, the planned increase in cumulated 1959-1965 state investment in public health, social security, physical culture and the medical industry, compared with the investment total of 1952-1958.

B. Education, excluding science. Estimate obtained as follows (billion rubles):

	1958	1965
Outlays on education, excluding science	80.2	160.0
Less		
Capital outlays	9.7	17.4
Stipends	6.9	10.2
Equals		
Total operating outlays	63.6	132.4

Outlays on education, excluding science. Figure for 1958 obtained by subtracting outlays on science from all sources, 24.2 billion rubles, from total outlays on education including science, 104.4 billion rubles (N. kh. 1959, p. 805).

The Control Figures and Khrushchev's speech to the Congress provide the following information on Seven Year Plan goals in the field of education: (i) the number of students in elementary and secondary schools is to increase by at most one-third, from 30 millions to

38-40 millions; (ii) the number of pupils attending boarding schools is to jump from 180,000 to 2,500,000; (iii) kindergarten enrollment is to grow by 84 per cent, from 2,280,000 to 4,200,000; (iv) higher educational institutions are to graduate 35 per cent more specialists in 1959-1965 than in 1952-1958, 2,300,000 as compared with 1,700,000, while the number of specialists with higher education in 1965 will total more than 4.5 million, or better than 50 per cent more than in 1958; (v) in 1959-1965 more than 4 million students will be admitted to specialized secondary institutions. Since the corresponding level of admissions averaged 566,000 in 1956-1958 (N. kh. 1959, p. 745), the implied 1959-1965 average of perhaps 600,000 represents a very small increase indeed.

I now attempt to translate these goals into outlay values. Outlays in 1958 on education excluding science can be conveniently broken down as follows (outlays from social insurance funds are identified with "other outlays" from social insurance funds shown in N. kh. 1959, p. 806; other data from ibid., pp. 803-805, or computed as residuals):

	Billion rubles
From state budget	69.0
From social insurance funds	0.2
From enterprises, collective farms, organizations	11.0
	80.2

A breakdown of expenditure on education excluding science is available only for state budget outlays, but since they accounted for 86 per cent of outlays from all sources, no great violence to the truth should be done if we assume that social insurance fund outlays and those by enterprises and organizations followed the same pattern. In 1958,

budget outlays on education excluding science were distributed as follows [all data except for boarding schools from N. kh. 1959, pp. 803-804; outlays on boarding schools in 1958 estimated as having doubled from 1957 level of 0.8 billion rubles (Raskhody na sots. kul't., p. 13), on the basis of increase in enrollment from 67,000 in March 1957 (TsSU, Dostizheniia sovetskoi vlasti za 40 let v tsifrakh, 1957, hereafter abbreviated to Dostizheniia..., p. 274) to 180,000 in 1958]:

	Billion rubles	Per cent
1. General education	39.8	57.7
a. Kindergartens	5.2	7.5
b. Elementary and secondary schools	26.6	38.6
c. Boarding schools	1.6	2.3
d. Other	6.4	9.3
2. Preparation of cadres	23.5	34.1
a. Higher educational institutions	11.4	16.5
b. Technicums, schools for preparation of semiprofessional cadres	5.4	7.8
c. Other	6.7	9.8
3. Cultural-educational operations, publishing, art and broadcasting miscellaneous	5.7	8.3
	69.0	100.0*

*Minor discrepancy between sum of components and total due to rounding.

The Seven Year Plan goals reproduced earlier can be associated with outlay categories which account for about 73 per cent of all budget expenditures on education excluding science. I now multiply the relevant 1958 outlays by the growth factors of the Plan goals (enrollment in higher educational institutions is assumed to increase by 50 per cent and in technicums, etc., by 10 per cent):

	Billion rubles	
	1958	1965
Kindergartens	5.2	9.6
Elementary and secondary schools	26.6	35.5
Boarding schools	1.6	22.2
Higher educational institutions	11.4	17.1
Technicums, etc.	5.4	5.9
	50.2	90.3

If the remaining budget and nonbudget outlays on education excluding science were to increase in proportion--that is, from 30.0 billion rubles in 1958 to 54.0 billions in 1965--then aggregate outlays from all sources on education excluding science would increase from 80.2 to 144.3 billion rubles. To make some notional allowance for possibly higher expenditures per pupil or student, a round estimate of 160 billion rubles is adopted.

Capital outlays. Total capital outlays on education including science in 1958 were 13.7 billion rubles (SNIP 1956-1958, Appendix Table D-2). From this total it is necessary to deduct an allowance for capital outlays on science.

All expenditures on science from all sources accounted for 23.2 per cent of all expenditures on education including science from all sources in 1958 (N. kh. 1959, p. 805). If the distribution of capital outlays between science and nonscience was proportional to the distribution of total gross outlays, capital outlays on science from all sources in 1958 would have been 3.2 billion rubles (23.2 per cent of 13.7 billion rubles). However, there is some evidence that this is an underestimate.

To begin with, suppose we made a similar calculation of capital outlays in 1956 and 1957. Capital outlays on all education including

science from all sources totalled 10.3 and 12.0 billion rubles, respectively (SNIP 1956-1958, Appendix Table D-2). The share of outlays on science in outlays on all education including science, both from all sources, was 19.3 per cent in 1956 (N. kh. 1959, p. 805) and, by interpolation, may be estimated at 21.3 per cent in 1957. Hence, on the assumption of a proportional distribution of capital outlays, these expenditures on science may be estimated as 2.0 and 2.6 billion rubles in 1956 and 1957.

A rough calculation of capital outlays on science from the budget alone in these two years (explained below) suggests levels of about 1.9 and 2.8 billion rubles.

Budget capital outlays on science in 1956-1957. The data for these computations are taken from Raskhody na sots. kul't., p. 59, which presents a distribution by type of expenditure, capital and current, of state budget outlays on science. However, the identified categories account for considerably less than half of total expenditures in either year. If omissions are, as seems likely, the gross expenditures of several organizational entities, and if the distribution of the omitted outlays between capital and current is the same as the distribution of identified expenditures, then unidentified capital outlays in 1956 and 1957 were 1.1 and 1.7 billion rubles and identified and unidentified capital outlays together 1.9 and 2.8 billion rubles, respectively.

Since nonbudget gross outlays on science came to about 7 billion rubles in these years, there is some reason to believe that 2.0 and 2.6 billion rubles are underestimates of total capital outlays on science in 1956 and 1957. Moreover, the data for gross outlays on science in 1958 are part of a new series with broadened coverage, compared to data published earlier. Data of the new series may include some investment previously classified with other budget categories (SNIP 1956-1958, Notes to Table 1, Part C, item C.2.b and Part D, item D.1.b). For these reasons, the original estimate of

3.2 billion rubles for all capital outlays on science in 1958 is raised to 4.0 billion rubles. Therefore, capital outlays from all sources on education excluding science in 1958 are estimated as 9.7 billion rubles (13.7 minus 4.0 billion rubles).

Capital outlays on education excluding science in 1965 are assumed to increase by 79 per cent compared with 1958. This is the planned increase in state investment in education, culture, and health in 1959-1965, as compared with 1952-1958.

Stipends. Total stipends for all education including science in 1958 were 7.0 billion rubles (SNIP 1956-1958, Notes to Table D, item D.7.b). The distribution of stipends by category of budget outlay in 1956-1957 was as follows (Raskhody na sots. kul't., pp. 46, 50, 55, 57, 59):

	1956		1957	
	Billion rubles	Per cent	Billion rubles	Per cent
Total stipends	7.67	100.0	6.94	100.0
1. Elementary and secondary schools	--	--	--	--
2. Technicums, etc.	2.53	33.0	2.14	30.8
3. Higher educational institutions	3.76	49.0	3.66	52.7
4. Science	0.07	0.9	0.08	1.2
5. Unspecified	1.31	17.1	1.06	15.3

I assume a relative distribution of stipends in 1958 which is the average of those for 1956 and 1957:

	Billion rubles	Per cent
Total stipends	7.0	100.0
Technicums, etc.	2.2	31.9
Higher educational institutions	3.6	50.9
Science	0.1	1.1
Unspecified	1.1	16.1

Comparison of the value of stipends in the categories indicated with enrollment in technicums, etc., and in higher educational institutions (N. kh. 1958, pp. 806-807) appears to show a decline in the value of the stipend granted per enrollee in the period 1951-1957. However, this apparent decline was probably due to a decrease in the proportion of students enrolled who received stipends. In daytime higher educational institutions, the proportion of students receiving stipends dropped from 84 per cent in 1951 to 77 per cent in 1957; the average annual value of the stipend per grantee, however, rose steadily from 3839 rubles in 1951 to 4505 rubles in 1956. The proportion of students in technicums receiving stipends declined from 76 per cent in 1956 to 72 per cent in 1957 (V. E. Komarev, Ekonomicheskie osnovy podgotovki spetsialistov dlia narodnogo khoziaistva, 1959, p. 135; Dostizheniia..., pp. 275, 278; TsSU, SSSR v tsifrakh, 1958, pp. 353, 356). For the purpose of estimating stipends in 1965, I assume that total stipends distributed in technicums, etc., and in higher educational institutions are planned to increase in proportion to enrollment by 10 and 50 per cent respectively, that is, it is assumed that any further decline in the proportion of students granted stipends will be offset by an increase in the value of the average stipend.

The value of the average stipend in science may have increased in the same period, depending on whether one divides the value figures by number of aspiranty or by the number of "scientific workers" in scientific institutions (N. kh. 1958, pp. 848, 843). However, since we are not told the size of projected increases in scientific manpower, it is necessary to estimate 1965 stipends in this category quite arbitrarily, as, say, twice the 1958 level, or 0.2 billion rubles.

Similarly, I arbitrarily estimate that unspecified stipends will also double, to 2.2 billion rubles. Hence, total stipends in 1965 are estimated as follows (billion rubles):

Technicums, etc.	2.4
Higher educational institutions	5.4
Science	0.2
Unspecified	2.2
Total	10.2

C. Other communal services. Arbitrary.

2. Government administration

I assume no change in employment and a 25 per cent increase in wages between 1958 and 1965. According to Voprosy ekonomiki, 1960, No. 1, p. 105, the Seven Year Plan provides for a 15.5 per cent increase in the number employed in the national economy as a whole and a decrease in the relative number employed in administration.

3. Gross investment

A. In fixed capital. The 1958 and 1965 figures are the respective sums of the following components (billion rubles):

	1958	1965
Public sector, excluding collective farms		
Centralized and noncentralized investment	229.9	420.6
Project-making outlays	5.1	10.2
Capital repairs	62.0	102.9
Collective farms	28.3	62.0
	325.3	595.7

Centralized and noncentralized investment. Table G, item 1.A.(2)(a).

Project-making outlays. In the 1950's, project-making organizations were not khozraschet organizations but were financed from the state budget. At the end of 1959 they were put on a self-financing basis: payment for their services connected with investment was to come from investment funds, while noninvestment activities were to be paid from operating funds of their clients or by the state budget (A. F. Milykh and F. N. Nazarov, Planirovanie proektno-izyskatel'skikh rabot v stroitel'stve, 1961, p. 16). This raises the question whether the changes instituted at the end of 1959 were foreseen in 1958 in drafting the Seven Year Plan. There is no question that for 1958 the valuation required is total actual operating costs of project-making organizations, and the datum is available, 5.1 billion rubles (TsSU, Kapital'noe stroitel'stvo v SSSR, 1961, p. 270). However, depending on whether or not the reorganization ordered in late 1959 was planned a year earlier, the estimate for 1965 should be the value of project-making outlays including profits as charged to clients or, alternatively, the operating costs covered by budget financing. Because a 1959-1965 target of the second type is available, it is convenient to assume that the 1959 change was incorporated in the Seven Year Plan context. Since the value of these outlays is relatively small, the degree of error involved if the hypothesis is wrong cannot be very serious.

Not all so-called project-making outlays are of an investment nature. No attempt is made here to separate out the noninvestment costs in 1958, both because of lack of information and the small size of the relevant magnitudes on the one hand, and because the noninvestment outlays

would still have to be included elsewhere in Table D. For 1965, however, the change in organization means that most noninvestment outlays would be current outlays and therefore excluded from Table D.

The statistical handbooks identify investment-type project-making outlays exclusively with investment from centralized funds, although according to Milykh and Nazarov, some of these expenditures after 1959 are financed from noncentralized and capital repair funds. Outlays financed from centralized funds account for up to three-quarters of total project-making outlays (loc. cit.). Since the former make up only 2 or 3 per cent of centralized fund investment, the value of project-making outlays financed from noncentralized funds is likely to be small. Moreover, it is possible that the failure to identify noncentralized fund outlays on project-making in the statistical handbooks is explained by their inclusion in identified noncentralized fund investment. This may also be true of project-making outlays connected with capital repairs. It would, then, be necessary to estimate only the 1965 value of project-making outlays directly connected with state investment.

The planned value of project-making outlays connected with specific construction projects of state investment in 1959-1965 is 48 billion rubles (ibid., p. 4). Other project-making outlays in this period, including some categories such as expenditures on urban and regional project-making, which might be financed from centralized funds, are to total 14-17.5 billion rubles, for a grand total of 62-66 billion rubles. Milykh and Nazarov also indicate that outlays from centralized funds make up (date unspecified) about three-quarters of the total. If this relation carries over approximately to the 1959-1965 planned outlays,

total centralized fund outlays are probably not much higher than the indicated 48 billions. The estimate adopted here is 50 billion rubles. The comparable 1958 figure is 5.6 billion rubles in 1955 estimate prices (N. kh. 1959, pp. 542-543). Milykh and Nazarov give no indication of the prices underlying the stated Seven Year Plan values but the magnitudes involved are more consistent with valuation in the handbook prices introduced at the beginning of 1958, which on the average were 22.6 per cent lower than those introduced at the beginning of 1956 (op. cit., p. 31). The latter are presumably the project-making component of what are called 1955 estimate prices. In 1955 prices, therefore, the 1959-1965 planned outlays would be valued at 65 billion rubles. Assuming a constant annual rate of increase, the implied 1965 level of expenditures is 13.2 billion rubles in 1955 prices and 10.2 billion rubles in 1958 prices. The rate of increase is large, 13.1 per cent, but the rate of growth of project-making outlays since 1952 has been even larger, 13.9 per cent by 1960 (Kapital'noe stroitel'stvo v SSSR, p. 266 - all project-making outlays).

Capital repairs. Table G, item 2.A.

Collective farm investment. For 1958, the estimate represents 30.4 billion rubles of current income allocated to the investment fund, less 2.1 billion rubles of wage payments from the investment fund (SNIP 1956-1958, Appendix Table C-1). The collective farms' internal financing of investment consists of money and in-kind resources. Since the latter are not included on the income side of the ledger (Table C) they must also be excluded here. Of total internally financed money investment, 33.6 billion rubles in 1958 (S. Komiunov, Nedelimye fondy i kapital'nye vlozheniia kolkhozov, 1960, p. 49), only 30.4 billion rubles,

representing deductions from current income, appear on the income side of the accounts and can be shown here as an investment expenditure. Since labor payments from investment funds are included with labor payments in the household accounts in SNIP 1956-1958 (Notes to Table 1, Part A, item A.1.C.), they are in effect treated as a disposition of current income, although they may in fact originate in income of previous years or in current year's income from other sources. Hence, these labor payments must be excluded from deductions from current income for investment.

I make no allowance here for investment financed from bank loans. The volume of new loans extended during the year was 4.8 billion rubles, while repayments amounted to 2.9 billion rubles (Koriunov, op. cit., pp. 23, 42). The amount of the net increase in indebtedness, therefore, was small, 1.9 billion rubles, and since the relation of the banks to the income account of the public sector is moot, no allowance is made here for credit-financed collective farm investment.

The estimate for collective farm investment in 1965, 62 billion rubles, represents 65 billion rubles of deduction from money incomes to the investment fund, less 3 billion rubles of wage distributions from investment funds (allowing for an increase in these distributions roughly in proportion to the increase in labor payments proper--see Appendix C, item 1.A).

B. In inventories. The table entries are the sums of investment by collective farms and by the rest of the public sector as follows (billion rubles):

	1958	1965
Collective farms	4.0	9.0
Other public sector	65.0	65.0
Total	69.0	74.0

Collective farms. The figures for inventory investment by collective farms represent estimated allocations to the working capital fund from money incomes in the given year. The 1958 figure is from SNIP 1956-1958, Appendix Table C-1; the 1965 figure is explained above, Appendix C, item 1.A.

Two considerations have directed choice of this procedure: first, recent price and organizational reforms have only just begun to stimulate long-neglected concepts of cost accounting in collective farms, and working capital data for 1958 are difficult to obtain and still more difficult to interpret. Again, much of collective farm inventory investment does not represent outlays from money incomes--i.e., does not have a counterpart entry on the income side (Table C) of the public sector's account and, hence, cannot be entered here on the outlay side. The estimate of allocations from incomes to the working capital fund, which are here taken to represent inventory investment, may err in the other direction by including increments in financial assets. However, there is reason to believe that allocations to the cultural fund, the third component of retained incomes (in addition to allocations to the investment and working capital funds), may also include some inventory investment (A. V. Rumiantseva, Obshchestvennye fondy kolkhozov, 1960, p. 24). It is assumed that omission of inventory investment in the form of allocations to the cultural fund offsets investment in financial assets from allocations to the working capital fund.

Public sector, excluding collective farms. The estimate for 1958 is based on official statistics showing the volume of working capital held in the public sector excluding collective farms on 1 January 1956 and 1959 and the structure of the totals by type of asset (Vestnik statistiki, 1961, No. 6, pp. 85-93). The value of all working capital on 1 January 1956 was 536.3 billion rubles and on 1 January 1959 747.7 billion rubles. The breakdown by type of asset is as follows (per cent):

Type of asset	On 1 January 1956	1959
1. Stocks of goods and supplies (tovaro-material'nye tsennosti)	73.3	76.6
2. Claims against goods shipped and services performed	10.6	10.1
3. Monetary claims	7.0	6.8
4. Debitory	8.6	6.2
5. Other	0.5	0.3
All assets	100.0	100.0

To obtain an estimate of the inventory stock at these dates it is necessary to deduct type 3 assets, "monetary claims" and type 4, "debitory" which are claims of various kinds, chiefly noncommodity in nature. (See any standard Soviet monograph on enterprise accounting or on working capital. For example, S. Barngol'ts and A. Sukharev, Oborotnye sredstva promyshlennykh predpriiatii, 1957, pp. 368-371.) Since type 5, "other," is insignificant in size, we need not trouble about its definition and we will deduct this too from the total.

The official data show that type 1 assets include at least two groups of items which must also be deducted. The first consists of expenditures for future periods, which are largely payments for services.

In principle, it is also necessary to deduct a large share of the value of seed, fodder, cattle, and other unfinished agriculture production. This is because the profits of the state farms, the sector relevant in this connection, are computed without account for income and consumption in-kind (Ekonomika sotsialisticheskikh sel'skokhoziaistvennykh predpriiatii, 1956, pp. 358-359). The income side of our public sector account (Table C) reflects state farm profits but not income in-kind, and therefore entries on the outlay side (Table D) must be framed to correspond. The adjustments required concern stocks of seed, fodder, immature cattle, and unfinished output. It is possible, of course, that some part of the seed, fodder, and cattle were purchased during the accounting period and are reflected in income and profits. Since it is the increment in inventories which is of direct interest, the error due to neglect of purchased seed, fodder, and cattle is not likely to be large. Accordingly, the total value of seed, fodder, immature cattle, and unfinished agricultural output are deducted. A third category of type 1 assets, "supplies and unfinished output of auxiliary agricultural economy," is not here deducted because of uncertainty with respect to the division between supplies and unfinished output as well as to the income accounting of these activities.

The value of type 2 assets, "claims against goods shipped and services performed," also requires adjustment, but lack of data makes for an unsatisfactory compromise. The first problem is to deduct service claims. The official data provide asset distributions for the individual sectors of the economy. The asset distributions of only two sectors, transportation and communications, and contract construction, explicitly list "services performed" along with "goods shipped" for type 2 assets. All other sector

distributions show only "goods shipped." If these two sectors are indeed the only ones where service claims are numerically significant, and, intuitively, this assumption would seem sensible, we may consider the sum of the value of the claims in this category in the two sectors as a liberal upper limit on the value of all service claims in all the sectors covered by the official data. The computed values are (billions of rubles): 1956, 2.2; 1959, 3.0; 1960, 3.3. Now, the value of type 2 assets for all sectors covered in these years was (billions of rubles): 1956, 56.8; 1959, 75.8; 1960, 83.3. Considering that type 2 assets in transportation-communications and construction include claims on goods as well as on services, the possible value of service claims appears small enough to be ignored. That is, type 2 assets for all sectors will be considered to cover goods only.

The second problem cannot, with present information, be resolved. Since sales-purchase transactions are not instantaneous and since the purchaser may record the goods on his account when he "accepts" the demand for payment presented by the seller, any delay in payment by the purchaser or in clearing the payment through the bank must result in double counting of the goods concerned. That is, until the payment clears the bank, both buyer and seller will have the goods recorded on their accounts. It is, of course, extremely difficult to estimate the size of this double counting. Robert Campbell speculated that at the beginning of 1956 as much as 10 billion rubles of goods might have been counted twice in this manner (p. 6 of the unpublished appendix to his "A Comparison of Soviet and American Inventory-Output Ratios," American Economic Review, September, 1958). This would amount to about 18 per cent of all type 2 assets at that date. On the other hand, should payment for goods precede their

actual shipment, the possibility arises that these goods will be listed on neither buyer's nor seller's accounts, thereby leading to understatement of the true value of type 2 assets. Since it seems impossible to estimate the magnitude of either error, it will be assumed here that they are mutually offsetting.

We may now compute the value of inventories at the two dates as follows:

	Billions of rubles on 1 January	
	1956	1959
Total working capital	536.3	747.7
Less: 1. Expenditures for future periods	7.0	8.2
2. Monetary claims, debitory and "other assets"	86.3	99.4
3. Seed, fodder, immature cattle, and unfinished agricultural output	12.6	25.8
Equals: Inventories	430.4	614.3

The difference between stocks at the two dates is 183.9 billion rubles. Inventory investment in 1958 may be estimated by assuming either a constant absolute annual increase or a constant annual rate of growth of stocks in the three years. Either assumption, of course, yields only an approximation of the actual fluctuating course of inventory investment over time. Moreover, error may also be the result of estimating an investment flow as the difference between beginning and end-period stocks, since this transmutes capital gains and losses into investment. Fortunately, the comparative price stability of this period suggests that changes in capital values due to price changes were probably not sizeable. Procurement prices for agricultural products did rise substantially in 1956 and again in 1958.

The cost of these price increases, however, was not passed on to sectors processing agricultural output but was largely defrayed by budget subsidies (see SNIP 1956-1958, Notes to Appendix C, item 5). This suggests, in turn, that the choice between assuming constant absolute increases or a constant annual rate of growth of stocks need not be made with reference to offsetting substantial capital gains (or losses) due to price changes.

The first assumption implies 1958 investment of 61.3 billion rubles; the second, 68.6 billion rubles. The figure adopted as the estimate for 1958 is the average of the two, 65 billion rubles.

The Control Figures do not indicate a target for inventory investment in the Seven Year Plan. K. Gorokhov, in Kommunist, No. 15, October 1960, p. 51, makes this cryptic statement immediately following a citation of the Plan goal for total capital investment: "Working capital (oborotnye sredstva) will conform (sootvetsvovat') to the almost twofold increase in the volume of output." The reference to a doubling of output is mystifying, since the planned increase in national income is only 62-65 per cent.

The Deputy Chairman of Gosbank's Administration, V. I. Ushakov, has provided the following clue: "According to preliminary calculations, based on the Control Figures for Development of the National Economy and on planned balances of raw materials, materials and finished output, short-term loans outstanding at the end of the Seven Year Plan period are to exceed 500 billion rubles, or increase by 50-60 per cent." (Den'gi i kredit, 1960, No. 7, p. 71.) The meaning of the percentage increase range is not clear: since in the previous paragraph Ushakov stated that loans outstanding at the end of 1958 totaled 320.1 billion rubles, to exceed

500 billion rubles at the end of 1965, they would have to increase by more than 56 per cent compared with the 1958 level. For the moment let us ignore this puzzle and examine one possible inference of Ushakov's statement, that inventories are to increase by 50-60 per cent.

Is such an increase "reasonable"? Ushakov's range implies an annual rate of growth of inventories of 6-7 per cent as compared with one roughly twice as high in the period 1956-1958. However, the rapid increase in these three years is unusually high compared with the rate of growth in the period before 1955 and may not be a reliable guide to future planned increases. Estimates compiled by Raymond P. Powell seem to show a long-term tendency for inventories to grow at about the same rate as total output. In the period 1956-1958 the implied rate of growth of inventories was 12.6 per cent compared with an average annual rate of growth of GNP of around 7-8 per cent. The rate of growth of GNP in 1959-1965 as computed in this study is 7.4 per cent, somewhat higher than that postulated for inventories.

Suppose, however, that inventories are planned to increase at a rate different from that of bank financing of working capital. Unfortunately, we have not been told what changes are planned for sources of finance other than bank loans. One Soviet writer, E. Mittel'man, has conjectured that so-called "own" working capital, which at the end of 1958 represented two-thirds of all sources of finance other than short-term loans, would increase less rapidly in the Seven Year Plan period than would bank financing (Den'gi i kredit, 1958, No. 12, p. 43). However, he may have merely projected trends of the immediate past: in the middle 1950's the share of short-term loans in total liabilities had been inching up (Vestnik statistiki, 1957, No. 2, p. 94; Den'gi i kredit, 1958, No. 11, p. 31).

In fact, given the sharp planned increase in enterprise profits (see Appendix C, item 1.B), an increase in the share of enterprise retained resources would seem the more likely.

If, then, a conservative estimate of the planned rate of growth of inventories is 6-7 per cent, the value of the stock at the beginning of 1965 would be 871.4-921.9 billion rubles and at the end of 1965, 923.7-986.4 billion rubles, implying inventory investment in 1965 of 52.3-64.5 billion rubles. The latter figure, rounded to 65 billion rubles, or the same as investment in 1958, is adopted as the 1965 estimate.

4. Internal security

The figure for 1965 allows for some increase in the average wage and reduction in manpower, compared with the 1958 level.

5. Military pay and subsistence

Table A, item 4.C.

6. Other outlays

A. Other defense (budget). For 1958, this figure was obtained by subtracting military pay and subsistence, item 5, from defense expenditures (budget), net of pensions, 90.6 billion rubles (SNIP 1956-1958, Table 1, Part D, item 4).

B. Outlays on science. For 1958, this figure was obtained by subtracting the sum of capital outlays on science, 4.0 billion rubles, and stipends, 0.1 billion rubles, from total gross outlays on science, 24.2 billion rubles (see above, notes to this table, item 1.B).

C. Remainder, including statistical discrepancy. This is the difference between total outlays, item 9, and the sum of all other outlays, items 1-6, 7.A-7.B, and 8.

D. Total. For 1958 the total is the sum of components. For 1965 the total is a residual obtained by deducting the sum of items 1-5 and 8 from item 9, total outlays.

7. Consolidated total value of goods and services, exclusive of sales to households

The sum of items 1 through 6.

8. Transfer outlays

Table A, item 9.

9. Consolidated total outlays

Equals consolidated net income, Table C, item 9.

Appendix E

NOTES TO TABLE G

1. Gross capital increments

A. State-cooperative sector

(1) Investment at estimate prices

(a) Centralized. The figure for 1958 is from N. kh. 1959, p. 43, while that for 1959-1965 is the midpoint of the range announced in the Plan, 1,940-1,970 billion rubles.

(b) Noncentralized. According to Broner (op. cit., p. 126), the 1959-1965 target for the sum of centralized and noncentralized investment is 2,413 billion rubles. The centralized investment value in this total is probably the maximum of the announced range. By implication, the goal for noncentralized investment is 443 billion rubles.

(c) Project-making outlays. Appendix D, item 3.

(2) Investment at 1958 prices

(a) Centralized and noncentralized. The entries represent adjustments of the investment figures at estimate prices. The procedure for the 1958 estimate was as follows: of the value of centralized and noncentralized investment at estimate prices, 149.9 billion rubles consists of construction-installation and 89.6 billion of other outlays (N. kh. 1959, p. 545). For construction-installation, the relation between outlays at current and at estimate prices in 1958 was 0.936 (Kapital'noe stroitel'stvo, p. 263). Applied to the figure of 149.9 billion, this coefficient yields a figure of 140.3 billion as the value of construction-installation at current prices. Other outlays are assumed to be the same at both current and estimate prices. For 1959-1965 and 1965, construction-installation is assumed to account for 60 per cent of centralized and noncentralized investment at estimate prices, in line with a long-standing trend for this relation.

(b) Project-making outlays. Appendix D, item 3.

(c) Change in unfinished construction. Kapital'noe

stroitel'stvo, p. 126. No information is available on planned changes in the Seven Year Plan period.

(d) Adjustment for overstatement. The 1958 gross capital increment at estimate prices is given as 238 billion rubles. (Ibid., p. 144.) On the assumption that construction-installation accounted for the same share of the gross increment as of gross investment and that the 1958 cost coefficient cited under 1.A.(2)(a) above would also apply, the 1958 gross capital increment at 1958 prices may be estimated as 227.9 billion rubles. The 1958 entry under this item represents the difference between 227.9 billion rubles and the sum of the previous sub-items under item 1.A.(2). The 1959-1965 and 1965 entries are adjusted proportionally.

B. Collective farms

(1) Investment

According to the statistical handbooks (N. kh. 1958, p. 619 and Kapital'noe stroitel'stvo, p. 152), collective farm investment in 1958 at 1955 estimate prices was 28.2 billion rubles, excluding purchases of machinery formerly belonging to the MTS. N. kh. 1959, p. 842, declares that the collective farm investment data also exclude capital repairs and purchases of cattle. (The same is stated somewhat indirectly in Kapital'noe stroitel'stvo, pp. 7-8.) At current prices collective farm investment of the same coverage may be estimated as about 30 billion rubles, as follows: Total money investment by collective farms in 1958 was 48.5 billion rubles (S. Koriunov, Nedelimye fondy i kapital'nye vlozheniia kolkhozov, 1960, p. 43) of which 18.7 billion rubles represented purchases of machinery from the MTS (M. G. Vainer, V. P. Alfer'ev, Planirovanie material'no-tekhnicheskikh sredstv v sel'skom khoziaistve, 1961, p. 65), 5.0 billion rubles purchases of cattle and 3.8 billion capital repairs (Koriunov, loc. cit.). This leaves 21.0 billion rubles as the value at current prices comparable in coverage to the statistical handbook figure. However, the figure of 21 billion rubles does not include the equivalent of in kind payment of collective farm labor which is

probably included in the handbook value. Koriunov implies a value for such labor contributions of about 9 billion rubles. (On p. 14 he states that in 1958 the value of labor contributions paid in kind represented 21.1 per cent of all allocations to "indivisible funds"; on p. 15 the value of the total allocations is implied as 42.6 billion rubles.) Koriunov does not indicate the basis for his valuation of labor in kind. In another passage (p. 73) he estimates the value of distributions in kind in payment for labor days earned in investment activities in 1956-1957 as 6.2 billion rubles at retail prices. It does not seem likely that this is the basis for the 1958 estimate of the value of labor in kind: money payments to labor for investment activities in 1958 were considerably less than the combined 1956-1957 amounts (p. 23). It is possible that the 9 billion ruble figure represents valuation of labor at wage rates of state construction, perhaps those prevailing on state farms. If this is the case, the current price estimate is probably a reasonably close analogue of the constant price handbook value.

Therefore, new investment in 1958 is estimated as 30.0 billion rubles, while capital repairs were 3.8 billions. The Control Figures call for 345 billion rubles, at 1955 estimate prices, of collective farm investment in 1959-1965. Koriunov indicates (p. 48) that this figure includes capital repair of buildings and structures; by omission of any mention of repairs to equipment he implies their exclusion. Exclusion of capital repairs does appear likely: The ratio of 1959-1965 construction, including repairs to buildings and structures (250 billions), to the 1958 value is roughly 12.1 (adding a proportionate amount of the value of labor in kind to the corresponding money value of investment in 1958 including capital repairs to buildings and structures, 14.9 billions, based on Vsesoiuznyi nauchno-issledovatel'skii institut ekonomiki sel'skogo khoziaistva, Povyshenie urovnia razvitiia kolkhoznogo proizvodstva, 1961, p. 91). If the 1959-1965 target for investment in equipment, 95 billion rubles, included capital repairs, the ratio to 1958 investment including capital repairs would be about 8.1. (In this rough calculation,

purchases from MTS are, of course, excluded.) It hardly seems likely that there would be so great a difference between rates of growth of construction and equipment investment in favor of the former. For this reason, it is assumed that the Seven Year Plan target excludes capital repair to equipment.

Capital repairs to buildings and structures are estimated as 10 per cent of the 1959-1965 construction target, repairs to equipment as 25 per cent of the planned investment in equipment. In 1957-1959, the value of repairs to buildings and structures represented 11-12 per cent of the value of construction including repairs to buildings and structures. Because of drastic changes in the level of equipment purchases after the dissolution of the MTS, the relation between repairs to equipment and equipment purchases in this period is not a suitable indicator: for 1957 the ratio is about 0.25, for 1958 about 0.08 and for 1959 about 0.45. The 1957 ratio is assumed to be a closer approximation to the planned proportions.

The Seven Year Plan targets are at 1955 prices. The estimate of investment at 1958 prices, 30 billion rubles, is 6 per cent greater than the handbook value at 1955 prices. This relation is used to transform the derived 1959-1965 estimates into corresponding values at 1958 prices. The results, rounded, are 340 billion rubles of new investment and 50 billion rubles of capital repairs. The 1965 values for new investment are obtained on the assumption of a constant annual rate of increase. This assumption is clearly not valid for capital repairs because of the once-for-all sharp increase in the level of outlays required in 1959 after the acquisition of MTS machinery. The 1965 value of capital repairs is set at twice the 1958 level. Given the 1959 value of capital repairs and the estimated 1959-1965 target, a constant annual rate of increase in the last six years of the plan period would yield approximately the indicated 1965 level of outlays.

(2) Change in unfinished construction

Koriunov, op. cit., p. 35. No information is available on expected changes in 1959-1965.

C. Private housing

The figure for 1958 is the value of private housing construction at 1955 prices, excluding dacha (summer homes) construction and capital repairs, given in Kapital'noe stroitel'stvo, pp. 8, 188. Values are undoubtedly imputed to the labor contribution of prospective owners but the basis of such a valuation has not been revealed.

In order to estimate the 1959-1965 and 1965 values, the 1958 figure is broken down into its urban and rural components, as follows:

Urban. In 1958, 24.5 million square meters of floor space was constructed by the private sector in urban areas (N. kh. 1959, p. 566). To estimate the value of this construction, we need to know the average value per square meter. A Soviet source (Finansy SSSR, 1960, No. 1, p. 14) estimates the 1959 average replacement value, in current wholesale prices, for privately-owned urban "structures" as 16,000 rubles per household (khoziaistvo). This figure is said to have been obtained by adjusting the actual average insured value for price changes. Since insurance for private structures is compulsory, the basic datum of average insured value is presumably comprehensive and accurate. The reliability of the adjustment factor cannot be ascertained. The same source also states that in 1959 8.9 million urban households owned "structures." It is assumed that all urban structures are dwellings and that households and dwellings are equivalent. From information available at the time, the stock of private urban housing in 1959 may be estimated as about 280 million square meters of floor space.

[Subsequent to the capital inventory of 1 January 1960, official estimates of the size of the private urban housing stock were increased substantially. Compare N. kh. 1958, p. 641 and N. kh. 1960, p. 613. According to the former source, the stock at the end of 1958 totaled 257 million square meters. In 1959, 27.2 million square meters of private urban floor space was completed (N. kh. 1959, p. 566). Retirements in 1959 may be estimated as about four million square meters, judging from the relation between construction and stock in the 1950's (N. kh. 1958, pp. 636, 641). Therefore, the 1959 stock is estimated as 280 million square meters on the basis of pre-1960 information.

Note, however, that the two sets of data -- new construction and housing stock -- may not be strictly comparable in one respect.

The data for new private urban construction beginning with 1956 include housing built by workers and employees of MTS-RTS, state farms and lumbering settlements. It is not clear whether estimates of the urban housing stock were also subject to this change in coverage.]

These data imply a replacement cost per square meter in 1959 wholesale prices of about 500 rubles.

We can try another approach by way of data on state loans granted for private construction and the floor space completed with the aid of those loans. In 1958, loans of about 1.5 billion rubles were granted and 227,000 dwellings with 9.8 million square meters of floor space were completed with this aid (Stroitel'naia gazeta, 11 February 1959, p. 4; Finansy SSSR, 1960, No. 5, p. 70). There is some question here about the definition of the unit of space constructed. The Soviet sources refer to "living space" (zhilaia ploshchad') -- a term which ostensibly excludes kitchens, bathroons, hallways, and so forth, but it is difficult to believe that a true "living space" measure is actually intended since the average size of dwelling built, 43 square meters, is relatively large.

["Large" in relation to the average size of publicly and privately owned construction, as indicated by evidence available:

a. The average size of the dwelling in the existing stock in 1959 was roughly 32 square meters of floor space, derived from the following data (sources previously cited): the 1959 stock was about 280 million square meters, and the number of urban households with privately owned structures was 8.9 millions in 1959.

b. The Seven Year Plan calls for new urban housing construction by both sectors of 650-660 million square meters of total floor space, equivalent to 15 million apartments, or about 44 square meters per apartment. In 1958 and 1959, the 71.2 and 80 million square meters, respectively, of total floor space constructed by both sectors were equivalent to 1.96 and 2.2 million apartments, or about 36 square meters per apartment (Pravda, 16 January 1959 and 22 January 1960).

c. According to Planovoe khoziaistvo, 1954, No. 4, p. 65, more than 100,000 homes were built for private urban owners in 1953 with a total floor space of more than 4 million square meters, or roughly 40 square meters per house.

d. A listing of Moscow suburban houses for sale to individuals in 1954-1955 included the following standard types:

2-room house without attic:	25.6 square meters
Same, with attic:	34
3-room house without attic:	42
Same, with attic:	54

(Gorodskoe khoziaistvo Moskvy, 1954, No. 4, p. 39, cited in J. S. Berliner, Urban Residential Building in USSR, CEIR Report A-42, May 1955, p. 43).]

I shall assume that the indicated Soviet sources really intended a measure of total floor space rather than "living space." These data imply a loan value of 150 rubles per square meter of floor space constructed with the aid of loans. However, the actual total cost is far higher than this figure, since the bank is permitted to lend no more than 50 per cent of the estimated cost of construction; the rest must be supplied by the prospective owner, either in cash or in personal labor. Some exceptions to this rule are permitted -- for example, 70 per cent mortgages for doctors and teachers, but their weight in the total is probably small. (Ministry of Finances USSR, Regulation #320, 16 May 1955, in Zakondatel'nye akty po voprosam narodnogo khoziaistva SSSR, II, 1961, pp. 549-550.)

It is likely that the average loan granted covers less than half the estimated construction cost. Apart from the 50 per cent of cost limit on loans, there is an absolute-value limit of 7000 rubles (again, with some exceptions, such as war disabled workers and employees, widows, doctors, teachers, demobilized and retired officers). Loans granted in 1958 averaged 6608 rubles per dwelling; the average replacement value of the dwelling in the stock in 1959 was 16,000 rubles, as previously cited, or 2.4 times the average 1958 loan value per dwelling. As an estimate of cost per dwelling constructed, 16,000 rubles may be an underestimate, for the average size of the dwelling in stock was 30 per cent less than that of construction aided by state loans, 32 as compared with 43 square meters. Hence, the true cost should be at least two-and-a-half times as great as the average loan value, or at least 375 rubles per square meter.

Of the total value of private urban floor space completed in 1958, only 9.8 million square meters was financed even in part from state credits. What was the average value per square meter of the remaining 14.7 million square meters? Occasional reports in the Soviet press provide some ground for the belief that a considerable

volume of private housing in the relative luxury class is constructed without the aid of loans. For example, the newspaper Sovetskaia Rossiia, 9 September 1960, p. 2 (translated in Current Digest of Soviet Press, XII:43, 23 September 1960, pp. 10-11) reported examples of private homes in Dagestan of up to 170 square meters in size costing as much as 200,000 rubles. Literaturnaia gazeta on 20 December 1960 disclosed sales of housing plots to individuals in a suburb of Kuibyshev at prices in the tens of thousands of rubles (reported by Paul Wohl in the Christian Science Monitor, 12 January 1961, p. 1).

Data supplied by Broner (op. cit., p. 90) imply an average value of the private urban housing stock on 1 January 1956 of 481 rubles per square meter at "contemporary" (presumably, 1955) prices; the implied value for state and cooperative housing is 764 rubles per square meter. In 1955 estimate prices the value of state and cooperative housing construction in 1956-1960 has been roughly 1000 rubles per square meter (N. kh. 1960, pp. 594-595, 611). It should be noted that the figure of 1000 rubles per square meter is obtained as the quotient of the value of all state and cooperative housing investment divided by the volume of urban state and cooperative housing in physical units completed and brought into use. Since unfinished construction is included in the numerator but not in the denominator of the unit value, the true value per square meter in 1955 estimate prices of state and cooperative housing construction is undoubtedly below 1000 rubles but probably higher than the figure of 764 rubles implied by Broner's data. If the unit values of private housing behave similarly, we may conjecture that the 1955 price counterpart of Broner's 1959 price valuation for private housing should be roughly 525-625 rubles per square meter. The higher figure, on this analogy, would be the appropriate multiplier of the value of housing constructed, to take into account unfinished construction.

Thus, reasonable estimates of unit values for private urban housing appear to be in the range 450-625 rubles which yield totals for 1958 of 11.0-15.3 billion rubles. The estimate adopted here is

12.3 billion rubles, based on a value per square meter of floor space completed of 500 rubles.

Rural. Given urban private investment of 12.3 billion and total private investment of 26.5 billion, the value of private rural housing investment in 1958 is by subtraction 14.2 billion rubles. Is this consistent with other available information? There is, unfortunately, even less information available on rural than on urban private housing investment. The amount of new construction completed in 1958 has been reported as a little more than 700,000 dwellings (Pravda, 16 January 1959) but the average size and value of dwellings are difficult to establish.

There is some evidence pointing to a rather low average unit value. I have previously cited a Soviet estimate of the replacement cost of urban housing. The same source also estimates the 1959 replacement value of privately owned rural structures as 10,000 rubles per household. Presumably, in addition to dwellings, other structures are included here. Since it may also be conjectured that each household, on the average, has more than one structure, that is, one dwelling and at least a fraction of a production structure, the average replacement value per dwelling would likely be tangibly less than 10,000 rubles.

The approach from the value of loans granted to private rural builders suffers from lack of critical pieces of information. Credits extended in 1958 totaled 1.3 billion rubles, but this sum includes loans for "acquisition for productive purposes" (Vestnik statistiki, 1960, No. 2, p. 92), hence the volume of credits for homebuilding alone may have been not much more than one billion rubles. Assuming an average loan value of 40 per cent of cost (the same as for urban construction), the cost of housing built with the aid of credits amounted to 2.5-3.0 billion rubles. However, there is no information on the volume of housing construction undertaken with and without the aid of loans.

On the other hand, two references to the expected value of investment in private rural construction during the Seven Year Plan period imply very much higher unit values. According to Stroitel'naia gazeta, December 3, 1958, the value of the seven million dwellings to be constructed in that period is about 150 billion rubles, or about 21,000 rubles per dwelling. P. S. Mstislavskii (Narodnoe potreblenie pri sotsializme, 1961, pp. 235-236) states that about 200 billion rubles are to be invested in rural housing construction. Whether this figure includes any state housing investment is not clear. If it does not, the implied value per dwelling is almost 29,000 rubles per dwelling.

Some support for the lower of these two average values is to be found in discussions of the regulation of rural resettlement. Discharged military personnel resettled in the new-lands regions are given 10,000-ruble credits for the purchase of a house and outbuildings. These credits represent only half the estimated value (P. A. Gureev, Tselinnye zemli zovut, 1960, translated in Joint Publications Research Service, No. 8507, 28 June 1961, p. 7). This appears to apply roughly to all rural resettlement, judging from a discussion in A. I. Volkov and I. V. Pavlov, Pravovoe regulirovanie sel'skokhoziaistvennogo pereseleniia v SSSR, 1959, pp. 145-149.

At a unit value of about 20,000 rubles, the 700,000 dwellings constructed in 1958 would be valued at 14 billion rubles or just about the estimate of rural housing investment obtained as a residual. This would seem to confirm the estimated value of private urban housing investment, given the official figure for the sum of both elements.

1959-1965: The volume of private urban housing construction in 1959-1965 has been given as 230 million square meters of floor space (Broner, op. cit., p. 98). At 500 rubles per square meter the value of this construction would be 115 billion rubles. For the value of 1959-1965 private rural housing construction, the figure cited previously from Stroitel'naia gazeta (3 December 1958), 150 billion rubles, is accepted.

1965: Broner (op. cit., p. 98) indicates that the volume of private urban construction was planned to reach a peak in 1960 and level off to about 30 million square meters in the last two years of the Plan period. Hence, 1965 private urban investment is estimated as one-fifth higher than the 1958 level, or 15 billion rubles. Rural private housing investment in 1965 is estimated as 20 billion rubles, representing the construction of about one million dwellings. This level of construction is suggested by (a) the 850,000 homes built in 1959 (Pravda, 22 January 1960) and the one million dwellings planned to be built in 1960 (Pravda, 28 October 1959), and (b) the planned pattern of growth of private urban housing construction.

D. Net increment of livestock, all sectors

The value of the total 1958 increment in cattle, hogs, sheep, and goats is estimated in Appendix Table E-1 as 11.54 billion rubles. This value must be adjusted to exclude increments of immature livestock and livestock being fattened for slaughter, which are considered working capital in Soviet statistics (Petrov, op. cit., p. 73). In the state sector alone, the value of livestock considered as working capital rose 7.1 billion rubles in the three years 1956-1958 and 4.0 billion in 1959 (N. kh. 1960, pp. 92, 96). Based on these data and on changes in herds held by collective farms and the private sector, the adjustment for 1958 is estimated as 6.5 billion rubles.

The value of the total 1965 increment of the livestock categories covered was obtained as follows: herd increases of 2 million cows, 3 million other cattle, and 8 million sheep are estimated by Johnson and Kahan, The Soviet Agricultural Program: An Evaluation of the 1965 Goals, The RAND Corporation, RM-2848-PR, May 1962, pp. 71-72. The authors also estimate the hog stock at the end of 1965 as 100 million head and note that pork production is supposed to double in the Seven Year Plan period (p. 71 footnote). As compared with a total increment in the hog population of 4.3 million head in 1958, the 1965 increment is here estimated as 7 million. These quantities are multiplied by unit prices obtained from Appendix Table E-1 as

Appendix Table E-1

VALUE OF INCREMENT OF LIVESTOCK HERDS IN 1958,
BY CATEGORY AND SECTOR

	State farms			Collective farms			Private sector			All sectors
	P	Q	V	P	Q	V	P	Q	V	V
Cows	1854	343	636	2213	775	1715	2172	750	1629	3980
Other cattle	1236	866	1070	1475	2119	3126	1448	(-)777	(-)1125	3071
Hogs	715	706	505	674	3176	2141	668	462	309	2955
Sheep and goats	125	2969	371	183	3736	684	204	2347	479	1534
All categories			2582			7666			1292	11540

Notes:

P = Price in rubles per head; Q = Quantity in thousand head; V = Value in million rubles.
For state farms quantities relate to herds on the farm plus livestock of state enterprises turned over to procurement organizations.

Sources:

Quantities: N. kh. 1959, pp. 384-385.

Prices: Prices per ton of live weight of cattle, hogs, sheep, and goats procured from collective and state farms in 1958 are given in A. G. Zverev, Natsional'nyi dokhod i finansy SSSR, Moscow: Gosfinizdat, 1961, p. 311. These were converted to prices per head by multiplication by average weights per head as follows: "other cattle" - 270 kg. for collective farm deliveries and 300 kg for state farm deliveries [Vestnik sel'skohoziaistvennoi nauki, 1959, No. 11, cited in Joint Publications Research Service, Selected Translations on Soviet Agriculture, No. 9, 23 June 1960 (JRPS: 3425) p. 83]; hogs - 85 kg. for all deliveries in 1957 from TsSU, Zhivotnovodstvo SSSR, Moscow: Gosstatizdat, 1959, p. 207; sheep and goats - 37 kg. for collective farm deliveries in 1957 (Agitator, 1958, No. 5, pp. 35-37). The price of cows is assumed to be 50 per cent greater than the price of other cattle. Prices per head for livestock of the private sector in 1958 are computed in SNIP 1956-1958, Notes to Table 1, Part A, item A.1.e.

Values: Price times quantity.

weighted averages of state and collective farm prices. In rubles per head these average prices are 2034 for cows, 1356 for other cattle, 154 for sheep, 695 for hogs. The calculated total value of the increment in herds is 14.2 billion rubles.

Assuming a constant annual rate of growth, the 1958 and 1965 values of the total increment imply a cumulated 1959-1965 value of 90 billion rubles. It is assumed that only half of this value represents increments of livestock considered fixed capital. The adjusted 1965 value is that implied by the adjusted 1958 and 1959-1965 values.

2. Capital repairs

A. State-cooperative sector

The 1958 figure is the sum of 5.0 billion rubles of repairs to the capital of budget organizations and 57.0 billion rubles of repairs to other state and cooperative sector capital. The latter figure was obtained by interpolation between the 1956 realized figure of 51.5 billion rubles (P. Bunich, in Nauchno-issledovatel'skii finansovyi institut, Planirovanie i finansirovanie kapital'nogo remonta osnovnykh fondov, 1958, p. 5) and the 1959 planned value of 60 billion rubles (Voprosy ekonomiki, 1959, No. 4, p. 106). Budget organization repairs were estimated as follows: in 1957, the last year for which such data were available, identified budget outlays on capital repairs of educational and health institutions were 3.7 billion rubles (Raskhody na sots. kul't., pp. 46, 71). If capital repairs were the same proportion of unidentified as of identified budget outlays (for discussion of the omissions, see above p. 177), the total value of repairs would have been 4.5 billion rubles. The 1958 estimate allows for an increase in the value of repairs compared with the calculated 1957 level.

For 1959-1965, the planned value of capital repairs financed from amortization allowances was stated to be 400 billion rubles (Planovoe khoziaistvo, 1959, No. 6, p. 20). It is assumed that this component is planned to account for three-quarters of all capital repairs. In the early and middle 1950's the share of depreciation-financed repairs in the total was considerably lower, about

three-fifths (estimates by Norman Kaplan), but in 1959 plan the former accounted for 78.7 per cent and in 1960 plan for 75.7 per cent of all repairs (Voprosy ekonomiki, 1959, No. 4, p. 106 and 1960, No. 10, pp. 48-49).

The 1965 figure is the sum of 10.0 billion rubles of budget organization repairs and 92.9 billion rubles of repairs to other state-cooperative sector capital. Budget organization repairs are estimated as twice the 1958 level: Capital outlays on health and education are estimated as increasing 80 per cent (see Appendix D, items 1.A and 1.B), but an allowance is made for the probably larger planned increase in capital outlays on science. Other state-cooperative repairs in 1965 are derived from the 1958 figure and the estimate for 1959-1965.

The 1959-1965 figure is the sum of 53 billion rubles of budget organization repairs, calculated from the 1958 and 1965 figures on the assumption of a constant annual rate of growth, and 533 billion rubles of other state-cooperative sector repairs.

B. Collective farms

See above, sources for item 1.B.(1) of this table.

C. Private housing

Capital repairs on private housing are estimated in the Central Statistical Administration by rule of thumb as 2 per cent of the value of private housing at full original cost (T. V. Riabushkin, in Institut ekonomiki AN SSSR and Moskovskii ekonomiko-statisticheskii institut, Voprosy ekonomicheskoi statistiki, 1958, p. 49). At replacement cost, the value of private housing on 1 January 1960 may be estimated as 455.2 billion rubles, as follows: According to A. G. Zverev, Natsional'nyi dokhod i finansy SSSR, 1961, pp. 300-301, housing accounted for 24.3 per cent of the value of fixed capital on 1 January 1960. It is clear from a comparison of the capital census data in N. kh. 1959, p. 67 with this and other indications given by Zverev in the same place that he is referring not to total capital as the base of the percentage but to capital of state enterprises

and organizations subject to the revaluation, 2001.1 billion rubles. Hence, the implied value for housing, 486.3 billion rubles, refers to state housing. Given the value of all housing as 941.5 billions, the value of private housing is 455.2 billion rubles.

The ratio of replacement-cost to original-cost value of all housing on that date was 1.327 (N. kh. 1959, p. 73). (In The Stock of Soviet Capital on January 1, 1960, The RAND Corporation, P-2248, March 15, 1961, pp. 22-23, Norman M. Kaplan has concluded on the basis of a series of calculations that while the ratios of revalued to original-cost capital for productive capital refer only to capital of the organizations subject to revaluation, the ratios for nonproductive capital cover a broader aggregate.) If this ratio applies to private housing, the original-cost value of private housing on that date was 343.0 billion rubles and 2 per cent of this value is 6.9 billion rubles. This figure is adjusted downwards to 6.0 billion rubles, to allow for the differences between the 1958 average annual and 1959 end-year value of capital.

Capital repairs to private housing in 1965 are estimated as one-third greater than in 1958. While the stock of privately owned urban housing was planned to increase by about the same margin as state housing, it is doubtful that the rural housing stock, all privately owned, is expected to increase substantially (Appendix B, item 2.A).

The 1959-1965 cumulated value is computed from the 1958 and 1965 values on the basis of a constant annual rate of growth.

3. Depreciation

A. State-cooperative sector

Each entry is the sum of actual amortization allowances by khozraschet enterprises and imputed depreciation for budget organizations, which do not compute amortization allowances.

Khozraschet enterprises. The figure for 1958 was obtained by interpolation between the realized value in 1957, 63.4 billions, and the planned value for 1959, 81 billions (Voprosy ekonomiki, 1959, No. 9, p. 3).

Cumulated allowances during 1959-1965 are estimated as 650 billion rubles. According to Planovoe khoziaistvo, 1959, No. 6, p. 20, allowances earmarked for capital repairs in this period were to be more than 400 billion rubles, "of which more than 250 billion rubles will be for repair of productive capital of industry and construction. The fund of full replacement of fixed capital [from amortization allowances -- A.S.B.] will be approximately the same sum." Unfortunately, it is not at all clear whether "approximately the same sum" refers to 250 or to 400 billion rubles.

It would seem likely that 250 billion rubles is the referent on the following evidence: (a) amortization allowances are planned on the basis of an overall average norm of 5.5 per cent of the value of capital, of which 2.3 per cent is for investment and 3.2 per cent for capital repairs (Planovoe khoziaistvo, 1960, No. 11, p. 39); (b) data compiled by Norman Kaplan indicate that allocations for investment have been consistently less than half of total amortization allowances.

Therefore, amortization allowances are estimated as 650 billion rubles. The 1965 value was then computed from the 1958 and 1965 values, on the basis of a constant annual rate of increase.

Budget organizations. For national planning purposes, the Central Statistical Administration independently estimates depreciation, evidently applying some depreciation rate to the capital stock value (Sobol', op. cit., p. 172).

At census values, budget organization capital at the end of 1959 was about 200 billion rubles (Kaplan, The Stock of Soviet Capital on January 1, 1960, p. 28). For this type of capital in organizations subject to the revaluation, the ratio of the census to the original-cost value was 1.160 (N. kh. 1959, p. 73). If this ratio can be applied to budget organization capital at census values (for a discussion of the problems involved, see Kaplan, op. cit., pp. 21-25), the original-cost value was roughly 170 billion rubles. The average annual 1958 value at original cost is estimated as 150 billion rubles.

(All nonproductive capital increased at 8.7 per cent per year and housing at 9.2 per cent between 1955 and 1959. N. kh. 1959, p. 66.)

The depreciation rate applied to this estimated value of the capital stock is 1.5 per cent. The actual rate for capital of khozraschet organizations may be estimated as about 2 per cent as follows: amortization allowances for replacement in 1959 were planned to be 33 billion rubles (Voprosy ekonomiki, 1959, No. 4, p. 106). At original cost, the corresponding capital stock at the end of 1959 was 1780 billion rubles (N. kh. 1959, p. 65). (For this purpose, the capital stock of khozraschet organizations is taken to be coterminous with the capital of organizations undergoing revaluation.) Given the higher proportion of long-lived buildings in budget organization than in khozraschet organization capital, a lower depreciation rate seems warranted.

Amortization of original cost alone is estimated, therefore, as 2.3 billion rubles in 1958. The 1965 value is estimated arbitrarily as increasing in proportion to the increase in allowances by khozraschet enterprises. The 1959-1965 cumulated value is then obtained on the assumption of a constant annual rate of growth. The entries in the table include, in addition, the value of outlays on capital repairs.

B. Collective farms

In contrast to khozraschet enterprises of the state and cooperative sector, collective farms have never deducted amortization allowances from incomes for earmarked investment funds. However, since 1956 they have been computing amortization for accounting purposes on the basis of state farm norms (Koriunov, op. cit., p. 34). Sobol' (op. cit., p. 172) declares that the CSA independently computed collective farm depreciation, but since this calculation is also likely to follow the guidelines of state farm accounting, it seems reasonable to use available information on collective farm accounting amortization. The 1958 and 1965 figures are explained in Appendix C, item 1.A. The cumulated 1959-1965 total assumes a constant annual rate of growth.

C. Private housing

Depreciation is roughly estimated as one per cent of the average annual value of the housing stock (see sources to Table 18, item A.1.c). At original cost, the January 1, 1960 value has been estimated as 343 billion rubles. The 1958 average annual value is estimated as 10 per cent lower, or 310 billion rubles. One per cent of this value is 3.1 billion rubles.

Depreciation in 1965 is estimated as increasing by 50 per cent over the 1958 level or roughly in proportion to the increase in the housing stock (see Appendix B, item 2.A). The 1959-1965 value assumes a constant annual rate of growth.

D. Losses of fixed capital; scrap value and underamortization of retirements

The losses relevant here are those not provided for by amortization allowances (for a discussion of the category of commodity losses in the national balance, see I. Morozova, Balans narodnogo khoziaistva i metody ego postroeniia, 1961, pp. 79-82). All commodity losses totaled 31 billion rubles in 1959 (Voprosy ekonomiki, 1961, No. 10, p. 67), and 29 billion rubles in 1960 (N. kh. 1960, p. 154). They are assumed to have been 30 billion rubles in 1958. Since information on the nature of these losses is scarce, it is difficult to estimate their distribution between fixed capital and other commodity losses. If the distribution were in proportion to the structure of total stocks (inventories and fixed capital), perhaps three-quarters of total commodity losses would represent loss of fixed capital [data for end 1959: 2965 billion rubles of fixed capital from N. kh. 1960, p. 86; inventories of state and cooperative sectors were 746 billion rubles, the sum of "commodity-material values" (tovaro-material'nye tsennosti) and goods in transit; collective farm inventories are estimated as 75 billion rubles (see above, p. 103), while twice that amount is arbitrarily allowed for state reserves]. This may appear high, but it seems doubtful that capital losses would account for less than half the total. More or less arbitrarily, capital losses in 1958 are estimated as 20 billion rubles.

No information is available on losses expected in the Seven Year Plan period. Although a two-year period is obviously too short for reliable judgment, the stability of losses in 1959-1960 may reflect a general tendency of losses to change somewhat independently of changes in the capital stock. Department of Commerce data suggest a similar conclusion for the United States (U.S. Department of Commerce, National Income and Product of the United States 1929-1950, 1951, p. 151, Table 4). The 1965 level is therefore estimated as 50 per cent larger than in 1958, an increase considerably smaller than that of gross investment. The 1959-1965 cumulated total is estimated on the assumption of a constant annual rate of increase.

The net book value of retirements, equivalent to scrap value plus (minus) underamortization (overamortization), is estimated as 10 billion rubles in 1958, and as 50 per cent larger in 1965. The 1958 estimate is based on a statement by P. G. Bunich (Osnovnye fondy sotsialisticheskoi promyshlennosti, 1960, p. 137) that net retirement losses in all of Soviet industry, defined as the difference between depreciated book value of assets withdrawn and their net scrap value, came to 7.4 billion rubles in 1958.

5. State-cooperative capital repairs financed from sources other than amortization allowances

These entries are obtained as the difference between all capital repairs by khozraschet enterprises (see sources for item 2.A) and amortization allowances earmarked for repairs. Repairs financed from amortization allowances are estimated as 41.7 billion rubles in 1958, an interpolation between the realized 1957 value of 36.8 billion (Voprosy ekonomiki, 1958, No. 10, p. 48) and the planned 1959 value of 47.2 billion (Voprosy ekonomiki, 1959, No. 4, p. 106). Repairs financed from amortization allowances in 1959-1965 are planned to be about 400 billion rubles (see sources to item 3.A). The corresponding value for 1965, 69.7 billion rubles, is derived from the 1958 and 1959-1965 values, assuming a constant annual rate of growth.

7. Net investment, adjusted estimate

Unadjusted, net investment (item 6) is estimated as 217.4 billion rubles in 1958. Compared with the official figure for net investment in 1959, 225 billion (N. kh. 1960, p. 154), the unadjusted 1958 estimate implies a relative increase between the two years that appears too low. The fact that an independent reconstruction of net investment in 1959 also overstates the actual value, as indicated by the official figure (Appendix Table F-1), lends support to the supposition. If the need for adjustment seems apparent, the amount of the adjustment is necessarily somewhat arbitrary. Adjustment of the 1965 estimate proportionally yields initial and terminal year values with an implied rate of growth identical to the percentage increase between 1958, on the basis of the adjusted 1958 estimate, and 1959 (official figure). The adjusted 1959-1965 estimate is that implied by its 1958 and 1965 bracketing values, on the assumption of a constant annual rate of growth.

Appendix F

THE COMPUTATION OF NET INVESTMENT AND CAPITAL STOCK INCREMENTS IN THE SOVIET NATIONAL BALANCES

The purpose of this appendix is to use available data on investment and the capital stock to clarify the procedures underlying the official calculations of net investment and the capital stock increment. These procedures are described in Chapter III, pp. 52-56, and may be summarized as follows:

For the series of fixed capital at census prices gross of depreciation, the annual increment of capital, $\dot{K}_G$, is computed as

$$\dot{K}_G = I^* - (W^* + L^*) \qquad (1)$$

where I^* is gross capital increments, W^* the replacement value of assets withdrawn and L^* capital losses, all at census prices.

Net fixed capital investment as an end use of national income at current prices, $\dot{K}_N$, is said to be computed as

$$\dot{K}_N = I + R - (D + W_N + L) \qquad (2)$$

where I is gross capital increments, R is capital repairs, D is depreciation, W_N is the net book value of assets withdrawn, and L is capital losses. D is the sum of two components -- D_O, amortization allowances for replacement, and D_R, amortization allowances for capital repairs. Since the difference between total capital repairs, R, and capital repairs financed from amortization, D_R, equals repairs financed from other sources (largely the budget), R_B, definition (2) may be simplified to

$$\dot{K}_N = I + R_B - (D_O + W_N + L) \qquad (2a)$$

Suppose, however, that the CSA in fact includes R_B with other depreciation charges against gross investment. Then,

$$\dot{K}_N = I + R - (D_O + D_R + R_B + W_N + L) \qquad (3)$$

which, in turn, can be simplified to

$$\dot{K}_N = I - (D_O + W_N + L) \qquad (3a)$$

The 1960 statistical handbook gives the value of $\dot{K}_N$ in 1959 and 1960 -- 225 and 263 billion rubles, respectively (p. 154). The value of $\dot{K}_G$ in 1960 is obtained as follows (row 1 from N. kh. 1959, p. 67; row 2 from N. kh. 1960, p. 85):

1.	Value of all fixed capital (including cattle) at the end of 1959, billion rubles	2964.7
2.	Index of value of total fixed capital, 1940=100	
	End 1959	263
	End 1960	241
3.	Per cent increase, end 1960 versus end 1959, allowing for rounding of index numbers	8.7 - 9.5
4.	Value of total capital, end 1960, billion rubles	3222.6 - 3246.3
5.	Value of 1960 increment, billion rubles	257.9 - 281.6

Thus, the 1960 value of $\dot{K}_G$ is 258-282 billion rubles and of $\dot{K}_N$ 263 billion rubles. The difference between the two is at most 7 per cent of the lower value in the compared pair; the minimum difference is 2 per cent. Is this virtual identity of the two values consistent with the description of the different procedure employed in their calculation?

If $\dot{K}_N = \dot{K}_G$, then, using definition (2a) for $\dot{K}_N$

$$(I^* - I) - (L^* - L) + D_O + W_N = W^* + R_B \qquad (4)$$

Alternatively, with definition (3a) of $\dot{K}_N$, the equality of $\dot{K}_N$ and $\dot{K}_G$ implies

$$(I^* - I) - (L^* - L) + D_O + W_N = W^* \qquad (5)$$

Under what conditions are such equalities possible? In a growing economy, as Evsey Domar pointed out (Essays in the Theory of Economic Growth, 1957, Chapter VII), annual depreciation charges, other things being equal, will be much higher than annual replacement.

Equations (4) and (5) appear to be inconsistent with this dictum. However, Domar's model requires consistent valuation of depreciation and retirements, and this is conspicuously absent in the Soviet data. The effect is that the magnitudes and signs of the other terms of the equation are such as to restore the inequality between depreciation and retirement, as demonstrated below.

In the period 1958-1960, the expression $(I^* - I)$ is likely to have been small and positive. For the predominant component of gross capital increments, those of the state-cooperative sector, estimate prices were most probably higher than current prices. This is certainly true of construction-installation; for equipment the difference may have been small, but construction-installation accounts form more than 60 per cent of investment by this sector. In Appendix Table F-1 the difference is estimated to have been 12 billion rubles in 1960. Current prices are higher than estimate prices of collective farm investment, but the absolute margin of difference is small -- 2.3 billion rubles in 1960, between gross investment (excluding cattle purchases and capital repairs) at current and at estimated prices. Current prices of livestock in these years were at their highest level in the 1950's, but livestock investment is a definitely minor component of the total. Price relations with respect to private housing investment are not known. Possibly, valuation at current prices would yield a larger total than at estimate prices. On balance, then, $I^* - I$ is likely to have been on the order of 5 billion rubles in 1960.

Most of the assets whose loss is accounted for in L are valued at depreciated original cost; only a small part represents abandoned investment projects valued at full current cost. Presumably, then, $L^* - L$ is positive and the difference between $(I^* - I)$ and $(L^* - L)$ close to zero. For simplification, it will be assumed that the difference is zero.

The likelihood of the equality of $\dot{K}_N$ and $\dot{K}_G$ thus devolves to a consideration of the likelihood of either

$$D_0 + W_N = W^* + R_B \tag{6}$$

or

$$D_0 + W_N = W^* \tag{7}$$

In 1960, the value of the left side of equations (6) and (7) is about 60 billion rubles, while the value of R_B is 16.5 billion rubles (Appendix Table F-1: D_0 is the difference between the sum of items 3.D plus 5, and item 2.D.; for W_N, see sources to item 4; R_B is item 5).

Unfortunately, it is extremely difficult to estimate independently the value of annual retirements. Turetskii (Planirovanie i problemy balansa narodnogo khoziaistva, p. 156) has estimated that the value of retirements in "contemporary prices" in the period 1950-1958 was 95-100 billion rubles, while that part of amortization allowances earmarked for new investment (that is, not for capital repairs) was 140-150 billions. The ratio of the former to the latter is about two-thirds. If Turetskii's estimate encompasses only amortization allowances actually deducted from income but all retirements, not just those in the sector where amortization allowances are deducted, we may estimate retirements in 1960 as two-thirds of amortization allowances allocated for new investment (a little over 37 billion rubles, using 1960 plan values, Voprosy ekonomiki, 1960, No. 10, p. 44), or 25 billion rubles. If he had in mind all depreciation, including the accounting amortization of collective farms and depreciation imputed to budget organizations and the private sector, amortization of original cost in 1960 was 47.5 billion rubles, and two-thirds of that sum is 32 billion rubles.

Three conclusions may be drawn from this incomplete evidence:

1. Given a range of (-)5 to (+)19 billion rubles as the difference between the 1960 capital increment and the official value of net investment in that year, given the margin of error attached

to the estimates of various components of $\dot{K}_N$ and $\dot{K}_G$ cited above, equality of the two totals consistent with the described procedures of calculating these values is not impossible.

2. If the above estimates are reliable, $\dot{K}_N$ is more likely computed by the CSA as in definition (3) than in definition (2).

The second conclusion can be subjected to an independent test by reconstructing net investment in 1959-1960 and comparing the results so obtained with the official data. The comparison is traced in detail in Appendix Table F-1. Net investment is computed in three variants under item 6: the first variant is that of definition (3), the second that of definition (2), and the third is an adjustment of definition (2) to exclude from the charges against gross investment amortization for repair imputed for budget organizations and private housing.

The results of the comparison are summarized in item 8 of the table. The discrepancy between official and estimated values, always computed as a per cent of the lower value in each pair compared, is in each year greatest for the third variant. In 1959 the first variant appears to provide the closest approximation to the official figure, in 1960, the best fit appears to be the second variant. Between items 6.A and 6.B, the variance of differences is about the same in the two years, but since the average difference for both years is lower for the first than the second, the first variant appears preferable as an approximation to the official data. It should be noted also that for 1960 a few of the elements of the calculation in Appendix Table F-1 lack adequate supporting data. On this ground alone, there would be some reason to accept the verdict of the 1959 over the 1960 comparison.

3. The ratio of the value of D_0 in 1960, about 50 billion rubles, to the total capital stock at the beginning of the year, 2965 billion rubles at census prices gross of depreciation (N. kh. 1959, p. 67) is less than .002. A list of actual amortization rates for "renewal" -- that is, not for capital repair -- adopted in the 1950's

Appendix Table F-1

GROSS AND NET FIXED CAPITAL INVESTMENT AT CURRENT PRICES IN 1959 AND 1960

	Billions rubles	
	1959	1960
1. Gross capital increments		
A. State-cooperative sector	242.0	266.0
B. Collective farms	38.4	33.6
C. Private housing	30.5	27.4
D. Net increment of livestock, all sectors	4.0	2.0
E. Total	314.9	329.0
2. Capital repairs		
A. State-cooperative sector	65.5	75.5
B. Collective farms	6.8	7.0
C. Private housing	6.4	6.8
D. Total	78.7	89.3
3. Depreciation		
A. State-cooperative sector	89.0	98.8
B. Collective farms	10.7	11.3
C. Private housing	9.7	10.2
D. Total	109.4	120.3
4. Losses; scrap value and underamortization of retirements	30.0	30.0
5. State-cooperative sector capital repairs financed from sources other than amortization allowances	12.8	16.5
6. Net investment variants		
A. Items 1.E plus 2.D less the sum of items 4.D, 5 and 6	241.4	251.5
B. Items 1.E plus 2.D less the sum of items 4.D and 5	254.2	268.0
C. Variant B plus capital repairs in budget organizations and private housing	266.1	280.8
7. Net investment, official data	225	263
8. Difference, as per cent of lower value in each pair, between official data and		
A. Variant 6.A	(+) 7.3	(-)4.6
B. Variant 6.B	(+)13.0	+ 1.9
C. Variant 6.C	(+)18.3	+ 6.8

Sources to Appendix Table F-1 (continued)

Sources:

1. Gross capital increments

A. State-cooperative sector. Gross capital increments at estimate prices are given in Kapital'noe stroitel'stvo, p. 144, as 252 and 278 billion rubles in 1959 and 1960 respectively. These figures are converted to a current price basis by the following crude adjustment: construction-installation is assumed to account for the same share of increments (at estimate prices) as of investment -- 62.2 per cent in 1959 and 62.7 per cent in 1960 (N. kh. 1960, p. 591). The resulting values of construction-installation increments are converted to current-price estimates by means of official data, showing the ratio of construction-installation investment at actual cost to the same aggregate at estimate prices to have been 0.939 in 1959 and 0.933 in 1960 (Kapital'noe stroitel'stvo, p. 263). Ratios for the other components of investment have not been made public. Since there has been no general adjustment of producers' goods prices since 1955, it is probably safe to assume that for equipment, estimate prices and actual costs to investors are not far apart. Therefore, increments at current prices are estimated as the sum of construction-installation at current prices, 147 and 162 billion rubles, and other components at estimate prices, 95 and 104 billion rubles, or 242 and 266 billion rubles.

B. Collective farms. Excluding capital repairs, cattle purchases, and acquisitions of MTS equipment, collective farm money investment at current prices was 21.0 billion rubles in 1958 (see Appendix E, item 1.B.(1)), 27.9 billion in 1959 (Povyshenie urovnia ..., p. 91) and 24.4 billion in 1960 (Gosudarstvennyi bank SSSR k XXII s"ezdu KPSS, 1961, p. 61). It is assumed that labor investment in kind and increments of unfinished construction changed proportionately. Therefore, 1959 and 1960 values of gross increments are obtained by applying the percentage increases implied by the above money investment figures to the estimate of the 1958 increment, 28.9 billion rubles (Table G, item 1.B(3)).

C. Private housing. Kapital'noe stroitel'stvo, p. 188.

D. Livestock. Estimates of the value of the increment of all cattle, hogs, sheep and goats in 1959 and 1960 were obtained in the same manner as shown in Appendix Table E-1, using that table's prices per head and quantities computed from N. kh. 1960, pp. 450-451. The resulting totals of 8.7 and 4.7 billion rubles in 1959 and 1960, respectively, must be reduced to exclude increments of immature livestock and livestock being fattened for slaughter which in Soviet statistics are considered working capital. In the state sector alone the value of livestock considered as inventories rose 4.0 billion rubles in 1959 (N. kh. 1960, pp. 92, 96) while in collective farms the increment was over a billion rubles (estimated from data on the structure of current assets on January 1, 1959 and 1960 in

Sources to Appendix Table F-1 (continued)

Obshchestvennye fondy kolkhozov i raspredelenie kolkhoznykh dokhodov, p. 198 and the value of total current assets on these dates as estimated above, p. 102, note 2). No comparable data are available for the private sector but since livestock holdings in this sector declined generally in both years, a decline in livestock inventories is probable. For 1959, the value of the total increment in the livestock categories covered, 8.7 billion rubles, is reduced by 4.7 billion rubles: a portion of the increment in collective farm livestock inventories is assumed to be offset by a private sector decline. Value data for 1960 are lacking, hence the adjustment of the 1960 total increment figure is quite arbitrary.

2. Capital repairs

A. State-cooperative sector. These entries are the sums of values of repairs in khozraschet enterprises and in budget organizations. The former values are estimated as 60 billion rubles in 1959 (the planned value given in Voprosy ekonomiki, 1959, No. 4, p. 106) and 69.5 billion in 1960 (planned value implied in Voprosy ekonomiki, 1960, No. 10, pp. 48-49). Budget organization repairs in 1958 were estimated (see Appendix E, item 2.A) as 5.0 billion rubles. They are arbitrarily set here as 5.5 billion in 1959 and 6.0 billion in 1960.

B. Collective farms. Sources are those cited above for money investment in 1959 and 1960 (sources for item 1.B of this table).

C. Private housing. The total private housing stock is assumed to have increased in proportion to the increase in private urban floor space, 6.9 per cent in 1959 and 5.6 per cent in 1960 (N. kh. 1960, p. 613). Since the CSA computes private sector capital repairs by rule of thumb as a per cent of the stock value, the 1958 capital repairs entry in Table G is multiplied by the indicated increases to obtain 1959 and 1960 estimates.

3. Depreciation

A. State-cooperative sector. These entries are the sums of amortization in khozraschet enterprises and for budget organizations. The former values are estimated as 81 billion rubles in 1959 (the planned value given in Voprosy ekonomiki, 1959, No. 9, p. 3) and 90 billion in 1960 (planned value given in Voprosy ekonomiki, 1960, No. 10, p. 44). Budget organization depreciation for replacement alone in 1958 was estimated in Table G as 2.3 billion rubles. The 1959 and 1960 values are estimated as 2.5 and 2.8 billion rubles, respectively, increases proportionate to those set for budget organization capital repairs (see sources above for item 2.A). Addition of budget organization capital repairs yields the estimates of budget organization depreciation.

B. Collective farms. The 1959 value is from Povyshenie urovnia..., p. 78. The 1960 value was obtained on the assumption of an increase proportionate to the increase in "indivisible funds," 6 per cent (N. kh. 1960, p. 492).

Sources to Appendix Table F-1 (continued)

C. Private housing. The 1958 value in Table G is increased in proportion to the estimated increases of the housing stock (sources for item 2.C of this table).

4. Losses; scrap value and underamortization of retirements

Appendix E, item 4. Scrap value and underamortization losses are assumed the same as in 1958.

5. State-cooperative sector capital repairs financed from other sources

Sources are those cited for capital repairs by khozraschet enterprises (sources for item 2.A of this table).

6. Net investment variants

C. Variant B plus capital repairs in budget organizations and private housing. Budget organization repairs are given in the sources for item 2.A of this table. Private housing repairs are entered as item 2.C.

7. Net investment, official data

N. kh. 1960, p. 154.

(Bunich, Osnovnye fondy sotsialisticheskoi promyshlennosti, pp. 289-290) implies an average rate closer to 3 per cent. The divergence between the two figures is suggestive of the degree of underamortization practiced in the Soviet economy even at the admittedly inadequate rates of the 1950's.

SUPPLEMENTAL DATA

The 1961 statistical handbook (TsSU, Narodnoe khoziaistvo SSSR v 1961 godu, 1962, pp. 68-69, 599), which has recently become available, provides additional data on net investment and capital increments. In the following summary comparison of data from N. kh. 1960 and N. kh. 1961, ranges are indicated for the capital increments to allow for rounding of the indexes and absolute values on which they are based:

	1959	1960	1961
N. kh. 1960			
1. Capital increment, billion rubles	..	258-282	..
2. Net investment, billion rubles	225	263	..
3. Difference between 1. and 2. in per cent of lower value in each pair	..	(-)1.9-7.2	..
N. kh. 1961			
1. Capital increment, billion rubles	..	268-303	284-310
2. Net investment, billion rubles	228	253	254
3. Difference between .. and 2. in per cent of lower value in each pair		5.9-19.8	11.8-22.0

The 1961 statistical handbook data differ from those of the 1960 handbook in the following respects:

1. Investment in 1959 is raised in the later data by 3 billion rubles or about 1 per cent. Investment in 1960 is lowered, according to the later figure, by 10 billion rubles or about 4 per cent.

2. The 1960 capital increment according to the 1961 handbook is roughly 10 billion rubles larger than was indicated by the 1960 handbook.

3. As a result, the difference between net investment and capital increment in 1960 is raised from (-)1.9 to (+)7.2 per cent, according to the 1960 handbook, to (-)5.9 to (+)19.8 per cent, according to the 1961 handbook. The difference with respect to 1961 is 11.8 to 22.0 per cent, and the mean difference is greater in 1961 than in 1960.

What accounts for these changes between statistical handbooks and how do the changes affect the argument developed above? It may be noted first that the changes with respect to net investment in 1959 and 1960 improve the fit of the estimates in Appendix Table F-1 (variant 6.A). The difference between those independent estimates and the revised official data is reduced slightly for 1959, from 7.3 to 5.9 per cent, but is reduced substantially for 1960, from (-)4.6 to (-)0.6 per cent. The absolutely and relatively greater magnitude of changes for 1960 may be explained by the preliminary nature of the estimates for 1960 released in the 1960 handbook and subsequent correction on the basis of later, more complete returns. The fact that the adjustments are distributed approximately proportionally between productive and nonproductive net investment, a reduction of 6 billion rubles in the former and 4 billion in the latter, tends to support the suggested explanation.

On the other hand, the new data sharply increase the divergence between capital increment and net investment in 1960. Assuming that the revised 1960 net investment figure is to be preferred to the previous datum, the difference between net investment and the capital increment implied in the 1960 handbook is increased from (-)1.9-7.2 to 1-11 per cent. Such a comparison may be appropriate, because much of the change in capital stock data appears to be due to revision of collective farm capital values on the basis of the census and revaluation of 1 January 1962. If this is the case, we may still be justified in treating $\dot{K}_N$ and $\dot{K}_G$ as substantially identical for purposes

of the Seven Year Plan estimates, so long as comparisons are kept within the framework of the capital stock indexes in the 1959 and 1960 handbookds.

LIST OF SOURCES CITED

I. NON SOVIET WORKS

Berliner, Joseph S. Urban Residential Building in the USSR, Washington, D.C., Corporation for Economic and Industrial Research, Report A-42, May 1955.

Bergson, Abram. The Real National Income of Soviet Russia Since 1928, Cambridge: Harvard University Press, 1961 (cited as Real SNIP).

_____. Soviet National Income and Product in 1937, New York: Columbia University Press, 1953.

_____ and Hans Heymann, Jr. Soviet National Income and Product, 1940-1948, New York: Columbia University Press, 1954 (cited as SNIP 1940-1948).

Bornstein, Morris. "A Comparison of Soviet and United States National Product," Joint Economic Committee, U.S. Congress, Comparison of the United States and Soviet Economies, Part II, Washington D.C.: U.S. Government Printing Office, 1959, pp. 377-395.

Campbell, Robert W. "Appendix" (unpublished) to "A Comparison of Soviet and American Inventory-Output Ratios," American Economic Review, XLVIII: 4 (September 1958) pp. 549-565.

Central Intelligence Agency. Labor Supply and Employment in the USSR 1950-1965, Washington, D.C., October 1960.

Chapman, Janet. Consumption Levels in the Soviet Union and the United States, The RAND Corporation, P-2173, November 18, 1960.

Denison, Edward F. "Theoretical Aspects of Quality Change, Capital Consumption, and Net Capital Formation," Problems of Capital Formation. Concepts, Measurement, and Controlling Factors. Studies in Income and Wealth, Volume Nineteen, Princeton: Princeton University Press, 1957, pp. 215-261.

Domar, Evsey D. Essays in the Theory of Economic Growth, New York: Oxford University Press, 1957.

Hoeffding, Oleg. "The Soviet Industrial Reorganization of 1957," American Economic Review, Papers and Proceedings, XLIX:2 (May 1959), pp. 65-77.

_____. Soviet National Income and Product in 1928, New York: Columbia University Press, 1954.

Sources (continued):

Hoeffding, Oleg and Nancy Nimitz. Soviet National Income and Product 1949-1955, The RAND Corporation, RM-2101, April 6, 1959 (cited as SNIP 1949-1955).

Jasny, Naum. Essays on the Soviet Economy, New York: Frederick A. Praeger, 1962.

Johnson, D. Gale and Arcadius Kahan. The Soviet Agricultural Program: An Evaluation of the 1965 Goals, The RAND Corporation, RM-2848-PR, May 1962.

_____. "Soviet Agriculture: Structure and Growth," Joint Economic Committee, U.S. Congress, Comparisons of the United States and Soviet Economies, Part I, Washington, D.C.: U.S. Government Printing Office, 1959, pp. 201-237.

Kaplan, Norman. Capital Investment in the Soviet Union, 1924-1951, The RAND Corporation, RM-735, November 28, 1951.

_____. The Stock of Soviet Capital on January 1, 1960, The RAND Corporation, P-2248, March 15, 1961.

Kaser, Michael C. "Changes in Planning Methods During the Preparation of the Soviet Seven-Year Plan," Soviet Studies, X:4 (April 1959), pp. 321-338.

_____. "The Reorganization of Soviet Industry and Its Effects on Decision Making," in G. Grossman (ed.), Value and Plan, Berkeley and Los Angeles: University of California Press, 1960, pp. 213-234.

Kerblay, Basile. "Entretiens sur la planification avec des économistes soviétiques," Cahiers du Monde Russe et Soviétique, I:1 (May 1959), pp. 174-179.

Levine, Herbert S. "The Centralized Planning of Supply in Soviet Industry," Joint Economic Committee, U.S. Congress, Comparisons of the United States and Soviet Economies, Part I, Washington, D.C.: U.S. Government Printing Office, 1959, pp. 151-176.

Newth, J. A. "Soviet Agriculture: The Private Sector 1950-1959," Soviet Studies, XIII:2 (October 1961), pp. 160-171.

Nimitz, Nancy. Soviet Expenditures on Scientific Research Since 1928, The RAND Corporation, RM-3384-PR, January 1963.

_____. Soviet National Income and Product 1956-1958, The RAND Corporation, RM-3112-PR, June 1962 (cited as SNIP 1956-1958).

Sources (continued):

Nimitz, Nancy. "Soviet Prices and Costs," Joint Economic Committee, U.S. Congress, Comparisons of the United States and Soviet Economies Part I, Washington, D.C.: U.S. Government Printing Office, 1959, pp. 239-284.

U.S. Department of Commerce, Office of Business Economics. National Income and Product of the United States 1929-1950, Washington, D.C.: U.S. Government Printing Office, 1951. This work is also known as 1951 National Income Supplement to the Survey of Current Business.

Volin, Lazar. "Reforms in Agriculture," Problems of Communism, VIII:1 (January-February 1959), pp. 35-43.

II. SOVIET WORKS

(The place of publication of all sources below is Moscow)

A. The Plan Documents (in order of appearance)

"Kontrol'nye tsifry razvitiia narodnogo khoziaistva SSSR na 1959-1965 gody (Tezisy doklada tovarishcha N. S. Khrushcheva na XXI s"ezde KPSS)," Pravda and Izvestiia, November 14, 1958.

Khrushchev, N. S. "O kontrol'nykh tsifrakh razvitiia narodnogo khoziaistva SSSR na 1959-1965 gody," Pravda and Izvestiia, January 28, 1959.

"Kontrol'nye tsifry razvitiia narodnogo khoziaistva SSSR na 1959-1965 gody (Utverzhdeny edinoglasno XXI s"ezdom KPSS 5 fevralia 1959 goda)," Pravda and Izvestiia, February 8, 1959. This is the text of the approved Control Figures.

B. Statistical Handbooks. Issued by Tsentral'noe statisticheskoe upravlenie (TsSU) pri Sovete ministrov SSSR and published by Gosstatizdat.

Dostizheniia sovetskoi vlasti za 40 let v tsifrakh, 1957.

Kapital'noe stroitel'stvo v SSSR, 1961.

Narodnoe khoziaistvo SSSR, 1956 (cited as N. kh. 1955).

Narodnoe khoziaistvo SSSR v 1956 godu, 1957 (cited as N. kh. 1956).

Narodnoe khoziaistvo SSSR v 1958 godu, 1959 (cited as N. kh. 1958).

Narodnoe khoziaistvo SSSR v 1959 godu, 1960 (cited as N. kh. 1959).

Sources (continued):

Narodnoe khoziaistvo SSSR v 1960 godu, 1961 (cited as N. kh. 1960).

Narodnoe khoziaistvo SSSR v 1961 godu, 1962 (cited as N. kh. 1961).

Sel'skoe khoziaistvo SSSR, 1960.

SSSR v tsifrakh, 1958.

SSSR v tsifrakh v 1961 godu, 1962.

Zhivotnovodstvo SSSR, 1959.

Other Statistical Handbooks

Ministerstvo finansov SSSR, Biudzhetnoe upravlenie, Raskhody na sotsial'no-kul'turnye meropriiatiia po gosudarstvennomy biudzhetu SSSR, Gosfinizdat, 1958.

C. Books and Articles in Books

Aganbegian, A. G. "Rost' proizvoditel'nosti truda v sel'skom khoziaistve -- vazhneishee uslovie povysheniia material'nogo blagosostoianiia trudiashchikhsia," pp. 109-134 in Moskovskii gosudarstvennyi universitet imeni M. V. Lomonosova, Kafedra politicheskoi ekonomii estestvennykh fakul'tetov, Povyshenie proizvoditel'nosti truda -- glavnoe uslovie rosta sel'skokhoziaistvennogo proizvodstva v semiletke, Izdatel'stvo Moskovskogo universiteta, 1960.

Agricultural Progress in the USSR. Materials of the Plenary Meeting of the C.C. of the C.P.S.U., December 15-19, 1958, Foreign Languages Publishing House, 1959.

Akademiia nauk SSSR, Institut ekonomiki, Obshchestvennye fondy kolkhozov i raspredelenie kolkhoznykh dokhodov, Ekonomizdat, 1961.

Aleksandrov, A. M. Gosudarstvennyi biudzhet SSSR, Gosfinizdat, 1961.

Bachurin, A. V. (ed.). Finansy i kredit SSSR, Gosfinizdat, 1958.

Barngol'ts, S. and A. Sukharev. Oborotnye sredstva promyshlennykh predpriiatii, Gospolitizdat, 1957.

Belik, Iu. A. Gosudarstvennyi plan i balans narodnogo khoziaistva SSSR, Gosplanizdat, 1960.

_____. Natsional'nyi dokhod SSSR v semiletke, "Znanie," 1959.

Bor, M. Z. Voprosy metodologii planovogo balansa narodnogo khoziaistva SSSR, Izdatel'stvo Akademii nauk SSSR, 1960.

Sources (continued):

Broner, D. L. Sovremennye problemy zhilishchnogo khoziaistva, "Vysshaia shkola," 1961.

Bunich, P. G. Osnovnye fondy sotsialisticheskoi promyshlennosti, Gosplanizdat, 1960.

Ekonomika sotsialisticheskikh sel'skokhoziaistvennykh predpriiatii, Sel'khozgiz, 1956.

Formy i pokazateli k sostanleniiu proekta .... See under Gosplan, below.

Gosplan pri sovete ministrov SSSR. Raschetnye i spravochnye materialy k obosnovaniiu proekta perspektivnogo plana razvitiia narodnogo khoziaistva SSSR na 1959-1965 gody and Formy i pokazateli k sostaveniiu proekta perspektivnogo plana razvitiia narodnogo khoziaistva SSSR na 1959-1965 gody in French translation in Cahiers de l'Institut de Science Économique Appliquée, Le Plan Septennal Soviétique, No. 107, Series G, number 10, November 1960, pp. 43-358.

Gosudarstvennyi bank SSSR k XXII s"ezdu KPSS, Kratkii ocherk deiatel'nosti Gosbanka za period mezhdu XX i XXII s"ezdami KPSS, Gosfinizdat, 1961.

Gozulov, A. I. Statistika sel'skogo khoziaistva, Gosstatizdat, 1959.

Gureev, P. A. Tselinnye zemli zovut, translated in U.S. Joint Publications Research Service, Resettlement of Military Personnel in the New Lands, JPRS: 8507, Washington, D.C., June 28, 1961.

Komarov, V. E. Ekonomicheskie osnovy podgotovki spetsialistov dlia narodnogo khoziastva, Izdatel'stvo Akademiia nauk SSSR, 1959.

Koriunov, S. Nedeliinye fondy i kapital'nye vlozheniia kolkhozov, Gosfinizdat, 1960.

Kotov, F. I. Voprosy truda v semiletnem plane, Gosplanizdat, 1960.

Kuleshov, V. U. Sotsialisticheskoe vosproizvodstvo, "Vysshaia shkola," 1961.

Kuvshinov, I. S., M. N. Gumerov, and Ia. A. Lovkov. Ekonomika sotsialisticheskogo sel'skogo khoziaistva, 2nd edition, Sel'khozgiz, 1959.

Materials of the Plenary Meeeting of the C.C. of the C.P.S.U. See Agricultural Progress in the USSR, above.

Sources (continued):

Milykh, A. F. and F. N. Nazarov. Planirovanie proektno-izyskatel'skikh rabot v stroitel'stve, Gosplanizdat, 1961.

Morozova, I. A. Balans narodnogo khoziaistva i metody ego postroeniia, Gosstatizdat, 1961.

Mstislavskii, P. S. Narodnoe potreblenie pri sotsializme, Gosplanizdat, 1961.

Nauchno-issledovatel'skii finansovyi institut, Planirovanie i finansirovanie kapital'nogo remonta, Gosfinizdat, 1958.

Petrov, A. I. (ed.). Kurs ekonomicheskoi statistiki, 3rd edition, Gosstatizdat, 1961.

Plyshevskii, B. P. Raspredelenie natsional'nogo dokhoda v SSSR, Sotsekgiz, 1960.

Raschetnye i spravochnye materialy ... See under Gosplan, above.

Riabushkin, T. V. "Metodologicheskie voprosy balansa narodnogo khoziaistva," pp. 19-66 in Institut ekonomiki, Akademiia nauk SSSR and Moskovskii ekonomiko-statisticheskii institut, Voprosy ekonomicheskoi statistiki, Gosstatizdat, 1958.

Rudoi, E. F. and T. I. Lazarenko. Razvitie transporta i sviazi v SSSR, 1959-1965, Gosplanizdat, 1960.

Rumiantseva, A. V. Obshchestvennye fondy kolkhozov, "Znanie," 1960.

Savinskii, D. V. Kurs promyshlennoi statistiki, 5th edition, Gosstatizdat, 1960.

Sitarian, S. Natsional'nyi dokhod soiuznykh respublik, Izdatel'stvo Moskovskogo universiteta, 1961.

Sobol', V. A. Ocherki po voprosam balansa narodnogo khoziaistva, Gosstatizdat, 1960.

Sokolovskii, V. D. (ed.). Voennaia strategiia. Voennoe izdatel'stvo Ministerstva oborony SSSR, 1962.

Sonin, M. IA. Vosproizvodstvo rabochei sily v SSSR i balans truda, Gosplanizdat, 1959.

Spiridonova, N. S. Khoziaistvennyi raschet v novykh usloviiakh upravleniia promyshlennost'iu, Izdatel'stvo Moskovskogo universiteta, 1961.

Sources (continued):

Stoliarov, S. G. O tsenakh i tsenoobrazovanii v SSSR, Gosstatizdat, 1960.

Teriaeva, A. P. "O garantiinoi denezhnoi oplate truda v kolkhozakh," pp. 149-165 in Akademiia nauk SSSR, Institut ekonomiki, Razvitie obshchestvennogo khoziaistva kolkhozov, Sel'khozgiz 1960.

Turetskii, Sh. Ia. Planirovanie i problemy balansa narodnogo khoziaistva, Ekonomizdat, 1961.

_____. "Rezervy ekonomii, sostav zatrat i khozraschet," pp. 3-36 in Turetskii (ed.), Rezervy ekonomii v narodnom khoziastve SSSR, Gosplanizdat, 1960.

Vainer, M. G. and V. P. Alfer'ev. Planirovanie material'no-tekhnicheskikh sredstv v sel'skom khoziaistve, Ekonomizdat, 1961.

Volkov, A. I. and I. V. Pavlov. Pravovoe regulirovanie sel'skokhoziaistvennogo pereseleniia v SSSR, Gosiurizdat, 1959.

Volodarskii, L. M. Statistika i planirovanie promyshlennosti, 2nd edition, Gosstatizdat, 1960.

Vsesoiuznoe soveshchanie statistikov, 4-8 iunia 1957 g., Gosstatizdat, 1958.

Vsesoiuznyi nauchno-issledovatel'skii institut ekonomiki sel'skogo khoziaistva. Povyshenie urovnia razvitiia kolkhoznogo proizvodstva, Ekonomizdat, 1961.

Zakondatel'nye akty po voprosam narodnogo khoziaistva SSSR, in two volumes, Gosiurizdat, 1961.

Zverev, A. G. "Finansy SSSR za 40 let sovetskoi vlasti," pp. 5-84 in Finansy i sotsialisticheskoe stroitel'stvo, Gosfinizdat, 1957.

_____. Khoziaistvennoe razvitie i finansy v semiletke (1959-1965 gg.), Gosfinizdat, 1959.

_____. Natsional'nyi dokhod i finansy SSSR, Gosfinizdat, 1961.

_____. Voprosy natsional'nogo dokhoda i finansov SSSR, Gosfinizdat, 1958.

Sources (continued):

D. Journal Articles. Listed by journal and date.

Current Digest of the Soviet Press

"Strumilin Speculates on Soviet Life Under Communism," XII:15 (May 11, 1960), pp. 11-14. Translation of Strumilin's article in Oktiabr', 1960, No. 3.

Den'gi i kredit

Pessel', M. "Effektivnost' bankovskogo kontrolia," 1958, No. 11, pp. 31-35.

Mitel'man, E. "Effektivno ispol'zovat' oborotnye sredstva," 1958, No. 12, pp. 37-46.

Levchuk, I. "Mezhvuzovskaia nauchnaia konferentsiia po voprosam kreditovaniia narodnogo khoziaistva, kreditnogo planirovaniia i kontrolia rublem," 1960, No. 7, pp. 71-75.

Kondrashev, D. "Razvitie sistemy optovykh tsen promyshlennosti, 1962, No. 6, pp. 23-33.

Ekonomika sel'skogo khoziaistva

Bubnovskii, N. "Sel'skoe khoziaistvo Ukrainy v semiletke," 1959, No. 2, pp. 25-34.

Iurkin, T. "Razvitie sovkhoznogo proizvodstva v RSFSR," 1959, No. 3, pp. 38-47.

Alisov, M. "Razvitie ovoshchevodstva i kartofelevodstva v semiletke," 1960, No. 1, pp. 11-19.

Kotov, G. "Ob ukreplenii nedelimykh fondakh v kolkhozakh," 1960, No. 1, p. 20-29.

Ekonomika stroitel'stva

"Stroitel'stvo mezhdu XX-XXII s"ezdami KPSS," 1961, No. 9, pp. 8-9.

"S"ezd stroitelei kommunizma," 1961, No. 11, pp. 3-8.

Finansy SSSR

Sitarian, S. "Natsional'nyi dokhod i biudzhet v gody semiletki," 1959, No. 9, pp. 9-18.

Sources (continued):

Uriupin, F. "Vazhnyi etap v razvitii gosudarstvennogo strakhovaniia imushchestva kolkhozov i naseleniia," 1960, No. 1, pp. 9-15.

Garbuzov, V. "Resheniia piatoi sessii Verkhovnogo Soveta SSSR i zadachi finansovykh organov," 1960, No. 5, pp. 3-15.

Zaks, G. and M. Guterman, "Bankovskii kontrol' v individual'nom zhilishchnom stroitel'stve," 1960, No. 5, pp. 70-74.

Garbuzov, V. "Uspeshno vypolnit' biudzhet chetvertogo goda semiletki -- vazhneishaia zadacha finansovykh organov," 1962, No. 1, pp. 3-18.

Kommunist

Gorokhov, K. "Finansy -- vazhnyi rychag mobilizatsii vnutrikhoziaistvennykh rezervov," No. 15, October 1960, pp. 49-59.

Oktiabr

See Current Digest of Soviet Press, above.

Planovoe khoziaistvo

Nikolaev, A. "Uluchshit' organizatsiiu zhilishchnogo stroitel'stva," 1954, No. 4, pp. 56-66.

Strukov, A. "Planirovanie natsional'nogo dokhoda v SSSR," 1957, No. 8, pp. 75-81.

Zverev, A. "Gosudarstvennyi biudzhet SSSR na 1958 god," 1957, No. 12, pp. 13-25.

Kotov, F. and P. Krylov, "Ob osnovnykh metodicheskikh polozheniiakh k sostavleniiu narodnokhoziaistvennykh planov," 1958, No. 9, pp. 11-24.

Perov, G. "Sotsialisticheskoe vosproizvodstvo v period osushchestvleniia semiletnego plana," 1959, No. 3, pp. 3-26.

Budavei, V., Ie. Ivanov, and K. Said-Galiev. "Rasshirennoe vosproizvodstvo osnovnykh fondov promyshlennosti SSSR v 1959-1965 godakh," 1959, No. 6, pp. 11-23.

Garbuzov, V. "Biudzhet novogo pod"ema ekonomiki i kul'tury strany," 1959, No. 12, pp. 3-15.

Duginov, I. "Nekotorye voprosy razrabotki finansovogo balansa po soiuznym respublikam," 1960, No. 2, pp. 80-86.

Sources (continued):

Filippov, P. "Sovershenstvovat' planirovanie amortizatsionnykh otchislenii," 1960, No. 11, pp. 39-43.

Lavrov, V. "Gosudarstvennyi biudzhet -- vazhnoe orudie planovogo rukovodstva," 1962, No 2, pp. 38-50.

Sotsialisticheskii trud

Golt'sov, A. "Raspredelenie i ispol'zovanie trudovykh resursov kolkhozov," 1960, No. 5, pp. 32-41.

Vestnik sel'skokhoziaistvennoi nauki

Rostovtsev, N. F. "Increasing Production and Improving the Quality of Meat," 1959, No. 11, pp. 50-57, translated in Selected Translations on Soviet Agriculture (Including Crops, Implements, and Livestock), No. 9, 23 June 1960, JPRS: 3425, issued by U.S. Joint Publications Research Service, New York and distributed by Office of Technical Services of the U.S. Department of Commerce, Washington, D.C.

Vestnik statistiki

Eidel'man, M. "Opyt sostavleniia otchetnogo mezhotraslevogo balansa proizvodstva i raspredeleniia produktsii v narodnom khoziaistve SSSR," 1961, No. 7, pp. 8-31.

Titel'baum, N. "Pokupka tovarov organizatsiiami, uchrezhdeniiami i predpriiatiiami v roznichnoi torgovle," 1961, No. 10, pp. 55-65.

(References in the text and appendixes to issues No. 2 of 1957, No. 2 of 1960, No. 6 of 1961 and No. 11 of 1962 are to statistical material).

Voprosy ekonomiki

Spiridonova, N. "Khozraschetnye stimuly ispol'zovaniia osnovnykh proizvodstvennykh fondov promyshlennosti," 1958, No. 10, pp. 46-57.

Lagutin, N. and V. Skuratov, "Natsional'nyi dokhod SSSR i ego ispol'zovanie v semiletnem plane," 1959, No. 2, pp. 18-28.

Bunich, P. "Amortizatsiia i voprosy finansirovaniia remonta i modernizatsii osnovnykh fondov," 1959, No. 4, pp. 106-115.

Kreinin, A. "Problemy tsenoobrazovaniia na transporte," 1959, No. 8, pp. 130-136.

Efimov, A. "Novye normy amortizatsii osnovnykh fondov," 1959, No. 9, pp. 3-13.

Sources (continued):

"Sotsial'no-ekonomicheskie problemy tekhnicheskogo progressa," 1960, No. 1, pp. 92-106.

Strumilin, S. "O differentsial'noi zemel'noi rente v usloviiakh sotsializma," 1960, No. 7, pp. 81-97.

Bunich, P. "Amortizatsionnyi fond i obshchestvennye izderzhki proizvodstva," 1960, No. 10, pp. 44-53.

Lagutin, N. "O sootnoshenii pokazatelei razvitiia promyshlennosti i sel'skogo khoziaistva SSSR," 1960, No. 11, pp. 55-63.

Bor, M. and A. Notkin, "Metodologicheskie problemy balansa narodnogo khoziaistvo," 1961, No. 5, pp. 36-47.

Eidel'man, M. "Mezhotraslevoi balans obshchestvennogo produkta i ego ekonomicheskoe soderzhanie," 1961, I No. 10, pp. 61-74.